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FUJIFILM

DIGITAL MINILAB Frontier

# SERVICE MANUAL

## DIGITAL MINILAB
# FRONTIER 355/375

## SCANNER/IMAGE PROCESSOR
# SP-3000

## LASER PRINTER/PAPER PROCESSOR
# LP1500SC/LP2000SC

## Principles of Operation

Image Intelligence™

**System Disk Ver.1.5 or later**

**First Edition**

PP3-C1033E

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# Introduction

This Service Manual outlines the principles of operation for the Fujifilm Digital Minilab FRONTIER 355/375.

This manual is a professional publication provided for qualified service personnel or persons fully trained in equipment service procedures. All other personnel and operators are restricted from servicing the FRONTIER 355/375. When maintenance service is needed, be sure to contact qualified service personnel.

**Precautions Generally Applying to All Serving Operations**

**⚠WARNING**

When servicing internal machine parts, make sure the power switch and the main power supply on the power distribution board are both set to the OFF position.
If the main power is left ON, electricity will flow as far as the power switch and power supply section, and this can cause electric shocks and/or short-circuiting.
If the power is left on, there is also the possibility that the machine may be accidentally activated causing damage to the machine and/or bodily injury.

**⚠CAUTION**

The dryer will be hot to the touch. Wait 15 minutes after turning off the power before commencing with servicing procedures.

- Wear gloves when handling the optical system parts to keep the parts free from fingerprints.
- When mounting machine parts, take care not to sandwich any of the wires.
- Each of the connectors is provided with a symbol indicating what it is to be connected to. Make sure the connectors are connected to the connectors, harness ends or parts bearing the corresponding symbols.
- The plastic connectors have a locking catch on the plug (male) end. To disconnect one of these connectors, loosen the catch first; to connect, make sure the catch engages (locks).
- If the connector can not be held with fingers, disconnect and reconnect it gently by holding all of its wires and releasing the lock.

**Service Manual Appropriations**

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1. SAFETY 1

2. MAIN SPECIFICATIONS 2

3. OUTLINE 3

4. OPERATION SEQUENCES 4

5. I/O PARTS DIAGRAM 5

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# Contetnts

1. SAFETY ..... 1-1

1.1 Laser Radiation Safety ..... 1-2
1.1.1 Laser Radiation Safety ..... 1-2
1.1.2 Laser Warning Label ..... 1-2
1.2 Safety Indications ..... 1-3
1.2.1 Caution Label Locations on Printer/Paper Processor ..... 1-3
1.2.2 Laser Caution Label Locations on Printer ..... 1-5
1.3 Processing Chemical (CP-48S) Handling Precautions ..... 1-6
1.4 Certification and Identification Labels ..... 1-7
1.4.1 Certification and Identification Label Locations on Scanner/Image Processor ..... 1-7
1.4.2 Certification and Identification Label Locations on Printer/Paper Processor ..... 1-8

2. MAIN SPECIFICATIONS ..... 2-1

2.1 Main Specifications ..... 2-2
2.1.1 Scanner and Image Processor (SP-3000) ..... 2-2
2.1.2 Laser Printer/Paper Processor (LP1500SC/LP2000SC) ..... 2-3
2.2 Dimensions and Weight ..... 2-4
2.2.1 Scanner (SP-3000) ..... 2-4
2.2.2 Printer Processor (LP1500SC/LP2000SC) ..... 2-5

3. OUTLINE ..... 3-1

3.1 Scanner (SP-3000) ..... 3-2
3.1.1 Scanner Configuration ..... 3-2
3.1.2 Scanner/Light Source Section Configuration ..... 3-3
3.1.3 Auto Film Carrier NC100AY ..... 3-8
3.1.4 Multi-film Carrier MFC10AY (Optional) ..... 3-13
3.1.5 Carrier Base Section ..... 3-14
3.1.6 Circuit Board Location and Functions ..... 3-15
3.1.7 Parameter Stored in Circuit Board ..... 3-16
3.1.8 Scanner Block Diagram ..... 3-19
3.1.9 Image Processing Block Diagram ..... 3-20
3.1.10 Image Data Transfer ..... 3-21
3.1.11 Backup FD Parameter ..... 3-23
3.2 Printer Section (LP1500SC/LP2000SC) ..... 3-25
3.2.1 Paper Supply Section Configuration ..... 3-25
3.2.2 Paper Supply Section Feed Roller Configuration ..... 3-26
3.2.3 Exposure Section Configuration ..... 3-27
3.2.4 Laser Unit Configuration ..... 3-28
3.2.5 Distribution Section ..... 3-29
3.2.6 Processor Entrance Unit ..... 3-30
3.2.7 Printer Electrical Equipment Section Configurations ..... 3-31
3.2.8 Circuit Board Main Functions ..... 3-31
3.2.9 Printer Electrical Equipment Block Diagram ..... 3-32
3.2.10 CTL20 Circuit Board Block Diagram ..... 3-33
3.3 Processor Section (LP1500SC/LP2000SC) ..... 3-34
3.3.1 Processing Section Configuration ..... 3-34

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3.3.2 Piping Diagram for Solution Circulation System ..... 3-35
3.3.3 Replenishment/Auto-washing Piping System ..... 3-37
3.3.4 Replenisher Cartridge Opening Mechanism ..... 3-38
3.3.5 Dryer Section Configuration ..... 3-39
3.3.6 Print Feeding Section/Sorter Configurations ..... 3-40
3.3.7 Processor Electrical Equipment Section Configuration ..... 3-41
3.3.8 Input Power Supply Section Parts and Circuit Functions ..... 3-42
3.3.9 Circuit Board Main Functions ..... 3-43
3.3.10 Processor Electrical Equipment Block Diagram ..... 3-43

4. OPERATION SEQUENCES ..... 4-1

4.1 Scanner ..... 4-3
4.1.1 Power Supply Control of SP-3000 ..... 4-3
4.1.2 Scanner Correction ..... 4-4
4.1.3 One-way/Two-way Mode ..... 4-5
4.1.4 Multi-DSP Image Processing ..... 4-6
4.2 Auto Film Carrier NC100AY ..... 4-8
4.2.1 135 Two-way Scanning ..... 4-8
4.2.2 135 One-way Scanning ..... 4-9
4.2.3 IX240 Scanning ..... 4-10
4.2.4 Initialization ..... 4-11
4.2.5 Machine Data Reading ..... 4-12
4.2.6 Reading Production and Working Information ..... 4-12
4.2.7 Search for Remaining Film (1) ..... 4-13
4.2.8 Search for Remaining Film (2) ..... 4-14
4.2.9 Feed Motor Initialization ..... 4-14
4.2.10 Door Open/Close Motor and Supply Motor Initialization ..... 4-15
4.2.11 Sensor Calibration at Initialization ..... 4-17
4.3 Paper Feed ..... 4-18
4.3.1 Initialization ..... 4-18
4.3.2 Shut-down Process ..... 4-23
4.3.3 Cutter Sequence ..... 4-24
4.3.4 Width Guide Position Setting ..... 4-26
4.3.5 Auto Loading ..... 4-27
4.3.6 Auto Rewinding ..... 4-30
4.3.7 Paper Drawing ..... 4-31
4.3.8 Back Printing ..... 4-32
4.3.9 Speed Adjustment ..... 4-33
4.3.10 Soft Nip ..... 4-34
4.3.11 Distribution ..... 4-35
4.3.12 Splice ..... 4-38
4.3.13 Paper End Process ..... 4-38
4.4 Exposure Section ..... 4-39
4.4.1 Start-up Initialization ..... 4-39
4.4.2 End Process ..... 4-40
4.4.3 Feed Start ..... 4-40
4.4.4 Exposure Preparation ..... 4-41

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4.4.5 Exposure Completion/RLD Exposure Stop ..... 4-42
4.4.6 Feed Completion ..... 4-42
4.5 Processor ..... 4-43
4.5.1 Heat-up Operation ..... 4-43
4.5.2 Normal Warm-up Operation ..... 4-44
4.5.3 Pre-heat Operation ..... 4-45
4.5.4 Cool-down Operation ..... 4-45
4.5.5 Heater Cooling Fan ..... 4-46
4.5.6 Monitoring Processing Solution Level ..... 4-46
4.5.7 Normal Operation Drive Control ..... 4-47
4.5.8 Auto Intermittent Operation Control ..... 4-47
4.5.9 Auto Cleaning Control ..... 4-48
4.5.10 Auto Cleaning Output Measurement ..... 4-49
4.5.11 Replenishment Pump Control ..... 4-50
4.5.12 Replenishment Initialization Control ..... 4-50
4.5.13 P1-R Replenishment Control ..... 4-51
4.5.14 P2-RA/P2-RB Replenishment Control ..... 4-54
4.5.15 Auto Opening Control ..... 4-57
4.5.16 Replenisher Level Adjustment ..... 4-59
4.5.17 Cleaning/Dilution ..... 4-60
4.5.18 Replenisher Cartridge Cap Cleaning Control ..... 4-62
4.5.19 Power Supply Restore Control ..... 4-63
4.5.20 Error Display Control ..... 4-64
4.5.21 Error Restore Control ..... 4-65
4.5.22 Pump Output Measurement ..... 4-65
4.5.23 Auto Replenishment Control (at installation) ..... 4-66
4.5.24 Intermittent Process ..... 4-67
4.5.25 Waste Solution Process ..... 4-68
4.5.26 Dryer Section Heat-up Control ..... 4-68
4.5.27 Dryer Section Temperature Adjustment ..... 4-69
4.5.28 Dryer Section Pre-heat Control ..... 4-69
4.5.29 Dryer Section Pre-heat Drive Temperature Adjustment ..... 4-70
4.5.30 Dryer Section Cool-down Control ..... 4-70
4.6 Densitometer ..... 4-71
4.6.1 Densitometer AD100 ..... 4-71
4.6.2 Densitometer AD200 ..... 4-75

5. I/O PARTS DIAGRAM ..... 5-1

5.1 Scanner (SP-3000) ..... 5-2
5.2 Auto Film Carrier NC100AY ..... 5-4
5.3 Multi-film Carrier MFC10AY (Optional) ..... 5-6
5.4 Printer Section ..... 5-7
5.5 Processor Section ..... 5-10

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# 1. SAFETY



1.1 Laser Radiation Safety ..... 1-2
1.1.1 Laser Radiation Safety ..... 1-2
1.1.2 Laser Warning Label ..... 1-2

1.2 Safety Indications ..... 1-3
1.2.1 Caution Label Locations on Printer/Paper Processor ..... 1-3
1.2.2 Laser Caution Label Locations on Printer ..... 1-5

1.3 Processing Chemical (CP-48S) Handling Precautions ..... 1-6

1.4 Certification and Identification Labels ..... 1-7
1.4.1 Certification and Identification Label Locations on Scanner/Image Processor ... 1-7
1.4.2 Certification and Identification Label Locations on Printer/Paper Processor .... 1-8

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# 1.1 Laser Radiation Safety



## 1.1.1 Laser Radiation Safety

This product is a Class 1 laser device for which biological hazards have not been established.
Follow all warnings on the device label and in the Users Manual.

| Laser Radiation Specification | | | |
|---|---|---|---|
| | **R** | **G** | **B** |
| Class | IIIB | | |
| Laser | Semi-conductor | Solid-state Laser | |
| Wavelength | 685 nm | 532 nm | 473 nm |
| Output Max. | 10mW | 7mW | 300µW |

**⚠WARNING**

- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- The exposure section front cover and upper side door of this device are provided with safety interlocks, which work to stop laser radiation being emitted when the covers are opened. Do not press the safety interlocks, when they are opened. Otherwise, radiation emissions may occur, resulting in serious hazards.

## 1.1.2 Laser Warning Label

Protective Housing Label and its position required by Section J of Chapter 1 of 21 CFR, issued by the U.S.FDA are shown in subsections 1.2.3 and 1.4.1.

***REFERENCE:***
*FDA (Food and Drug Administration) is the U.S. government agency which retains authority over major high energy-radiating product safety.*

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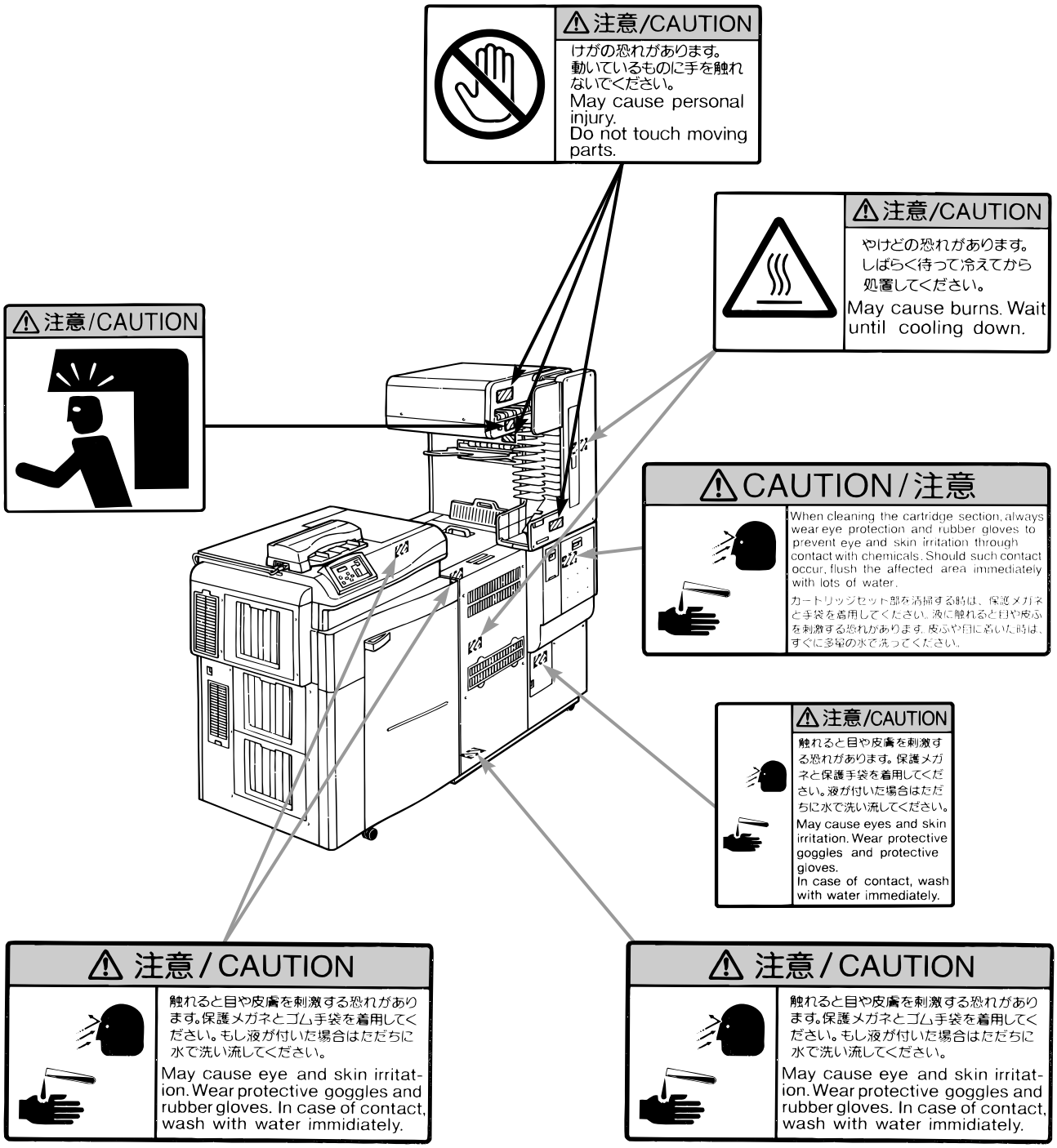
# 1.2 Safety Indications



On the machine, each location shown below is provided with a caution label concerning safety. In the case of operation or maintenance of the machine, take good care when doing work so that burns or other personal injury may be avoided.

### 1.2.1 Caution Label Locations on Printer/Paper Processor


⚠注意/CAUTION
けがの恐れがあります。
動いているものに手を触れないでください。
May cause personal injury.
Do not touch moving parts.
⚠注意/CAUTION
やけどの恐れがあります。
しばらく待って冷えてから処置してください。
May cause burns. Wait until cooling down.
⚠注意/CAUTION
⚠CAUTION/注意
When cleaning the cartridge section, always wear eye protection and rubber gloves to prevent eye and skin irritation through contact with chemicals. Should such contact occur, flush the affected area immediately with lots of water.
カートリッジセット部を清掃する時は、保護メガネと手袋を着用してください。液に触れると目や皮ふを刺激する恐れがあります。皮ふや目に着いた時は、すぐに多量の水で洗ってください。
⚠注意/CAUTION
触れると目や皮膚を刺激する恐れがあります。保護メガネと保護手袋を着用してください。液が付いた場合はただちに水で洗い流してください。
May cause eyes and skin irritation. Wear protective goggles and protective gloves.
In case of contact, wash with water immediately.
⚠ 注意 / CAUTION
触れると目や皮膚を刺激する恐れがあります。保護メガネとゴム手袋を着用してください。もし液が付いた場合はただちに水で洗い流してください。
May cause eye and skin irritation. Wear protective goggles and rubber gloves. In case of contact, wash with water immidiately.
⚠ 注意 / CAUTION
触れると目や皮膚を刺激する恐れがあります。保護メガネとゴム手袋を着用してください。もし液が付いた場合はただちに水で洗い流してください。
May cause eye and skin irritation. Wear protective goggles and rubber gloves. In case of contact, wash with water immidiately.

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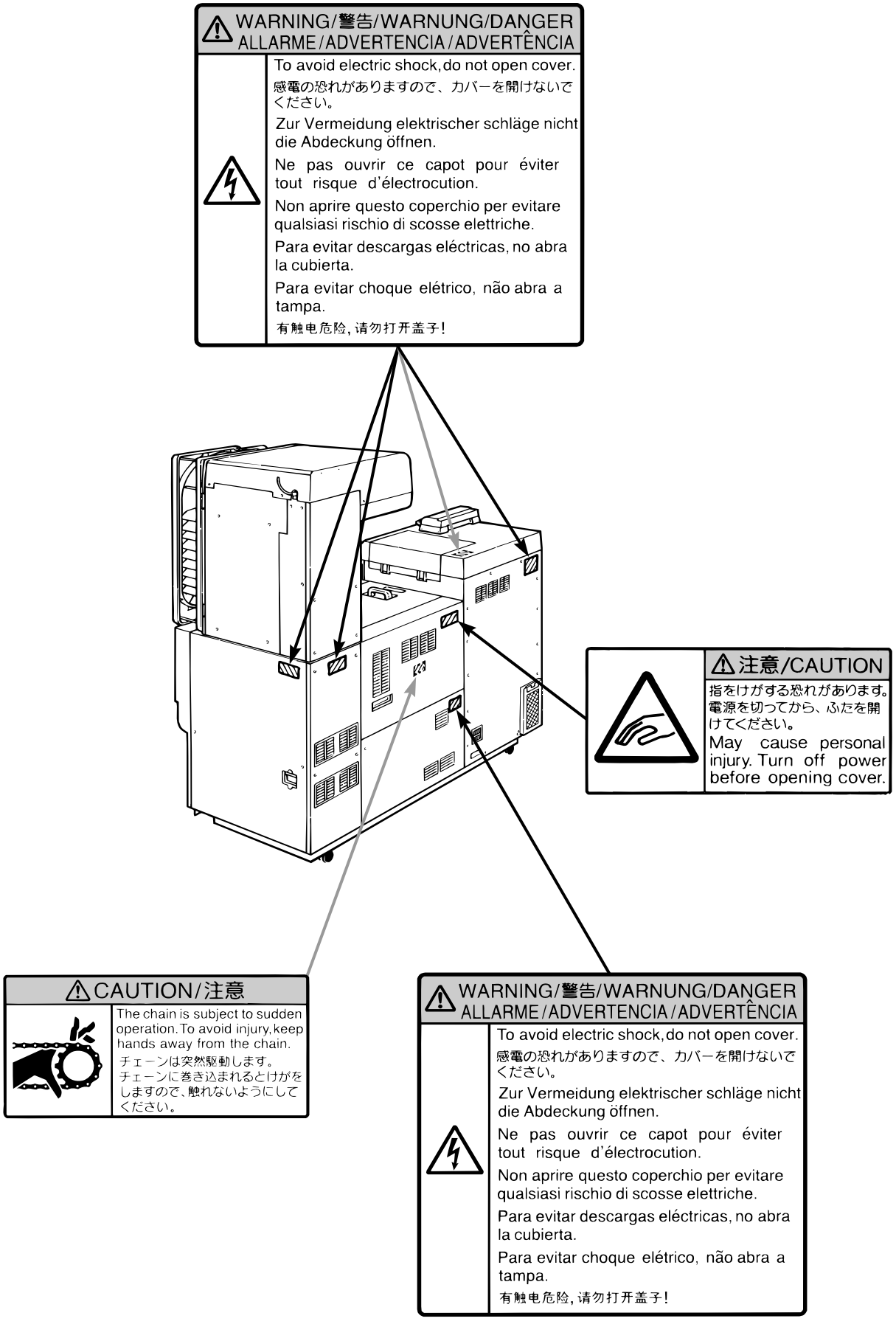
WARNING/警告/WARNUNG/DANGER
ALLARME/ADVERTENCIA/ADVERTÊNCIA
To avoid electric shock,do not open cover.
感電の恐れがありますので、カバーを開けないでください。
Zur Vermeidung elektrischer schläge nicht die Abdeckung öffnen.
Ne pas ouvrir ce capot pour éviter tout risque d'électrocution.
Non aprire questo coperchio per evitare qualsiasi rischio di scosse elettriche.
Para evitar descargas eléctricas, no abra la cubierta.
Para evitar choque elétrico, não abra a tampa.
有触电危险,请勿打开盖子!
注意/CAUTION
指をけがする恐れがあります。電源を切ってから、ふたを開けてください。
May cause personal injury. Turn off power before opening cover.
CAUTION/注意
The chain is subject to sudden operation. To avoid injury, keep hands away from the chain.
チェーンは突然駆動します。チェーンに巻き込まれるとけがをしますので、触れないようにしてください。
WARNING/警告/WARNUNG/DANGER
ALLARME/ADVERTENCIA/ADVERTÊNCIA
To avoid electric shock,do not open cover.
感電の恐れがありますので、カバーを開けないでください。
Zur Vermeidung elektrischer schläge nicht die Abdeckung öffnen.
Ne pas ouvrir ce capot pour éviter tout risque d'électrocution.
Non aprire questo coperchio per evitare qualsiasi rischio di scosse elettriche.
Para evitar descargas eléctricas, no abra la cubierta.
Para evitar choque elétrico, não abra a tampa.
有触电危险,请勿打开盖子!

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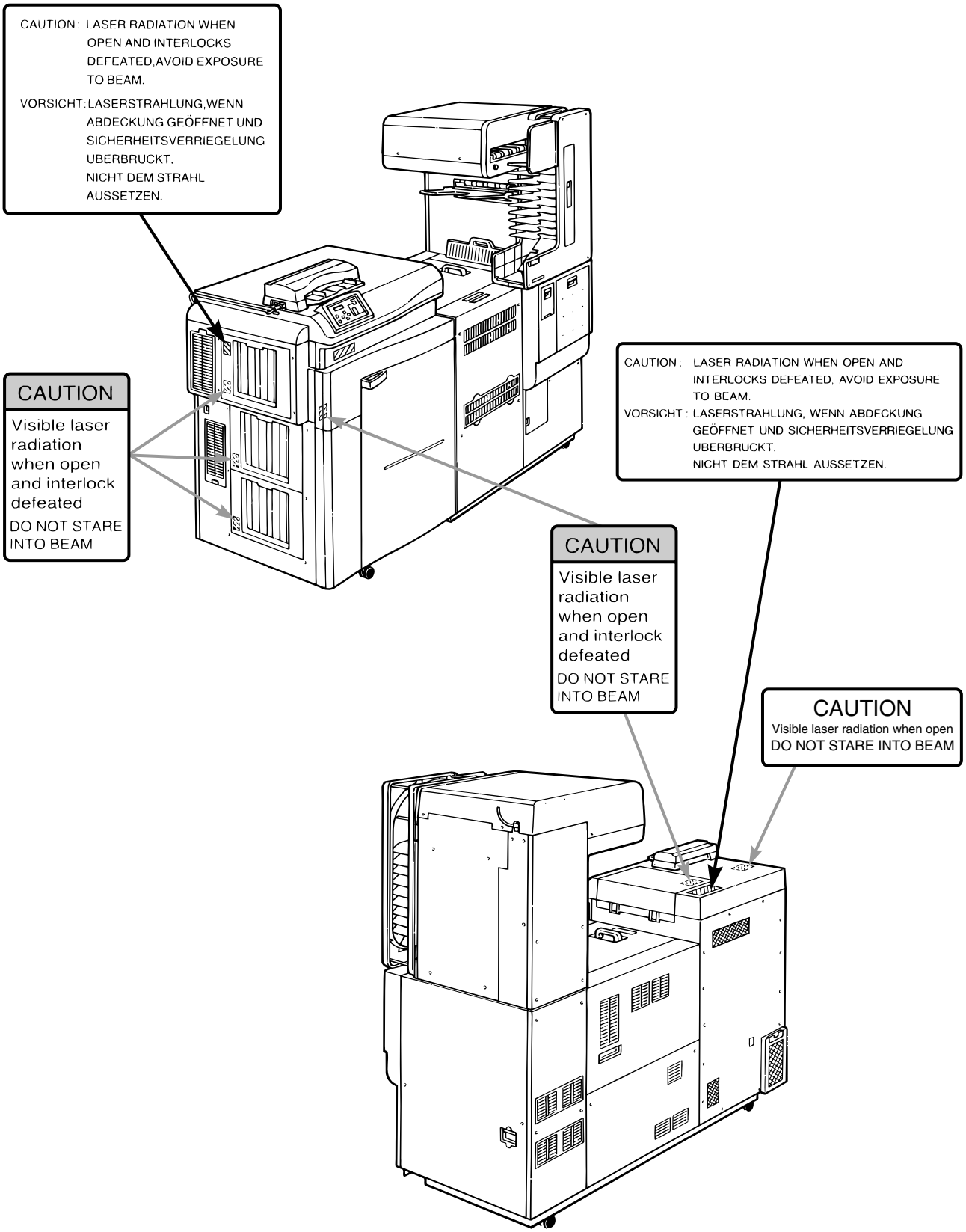
### 1.2.2 Laser Caution Label Locations on Printer


CAUTION : LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED,AVOID EXPOSURE TO BEAM.
VORSICHT : LASERSTRAHLUNG,WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG UBERBRUCKT. NICHT DEM STRAHL AUSSETZEN.
CAUTION
Visible laser radiation when open and interlock defeated
DO NOT STARE INTO BEAM
CAUTION : LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED, AVOID EXPOSURE TO BEAM.
VORSICHT : LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG UBERBRUCKT. NICHT DEM STRAHL AUSSETZEN.
CAUTION
Visible laser radiation when open and interlock defeated
DO NOT STARE INTO BEAM
CAUTION
Visible laser radiation when open
DO NOT STARE INTO BEAM

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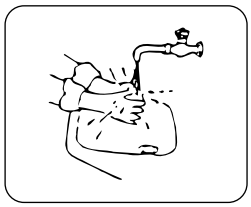
# 1.3 Processing Chemical (CP-48S) Handling Precautions



※ Processing chemicals should be handled in accordance with the precautions indicated on the boxes and labels of the respective chemicals.

**⚠CAUTION**

- Always wear protective gloves and safety goggles when handling chemicals with the above indications. This is recommended even for chemicals without these indications. For greater protection, the use of a protective mask and apron is also recommended.
- Wash hands thoroughly after handling processing chemicals or solutions.



- Any spilled chemicals should be wiped up immediately.
- Use caution when mixing chemicals as certain mixtures may produce toxic gases.
- If you get any chemical on your skin or in your eyes, immediately flush the affected part with a great amount of water.
- If you swallow any chemical or get any in your eyes, seek medical attention immediately and show the physician the information printed on the box or label of the chemical(s) involved.
- In some countries, chemicals carrying a poison label are required by law to be stored under lock and key. You are responsible for ascertaining and complying with the regulations concerning the handling of poisonous substances that apply in your country.
- Store chemicals in a safe place out of reach of children.
- Waste solutions should be disposed of in accordance with the ordinances governing the handling of industrial waste products in your locale. The P1-R chemical in the CP-48S replenisher cartridge and the Component A of the P1 start-up chemical fall into the category of industrial waste. Should you have any questions concerning these chemicals, consult your service representative.

※ Special note should be taken regarding the following properties of the CP-48S chemicals.

**⚠CAUTION**

- The P1-R chemical of the Replenisher Cartridge PC and Component A of the P1 Start-up Chemical
  These components contain P-phenylenediamine and may thus cause skin and eye irritation if improperly handled. They may be injurious to the health if swallowed.
- The P2-RA Chemical of the Replenisher Cartridge PC and Component A of the P2 Start-up Chemical
  These components cause oxidation in metals. They may produce harmful ammonia gas if mixed with a chlorine-based bleach (hypochlorite) or an alkaline (P1-R or N1-RA).
- The P2-RB Chemical of the Replenisher Cartridge PC and Component B of the P2 Start-up Chemical
  These components may produce harmful ammonia gas if mixed with a chlorine-based bleach (hypochlorite) or an alkaline (P1-R or N1-RA). They may also produce harmful sulfur trioxide gas when mixed with an acid.
- FSC100 (Fuji Super Conditioner)
  This component contains dichloroisocyanurate and may thus produce harmful chlorine gas if mixed with an acid. It could be injurious to the health if swallowed.

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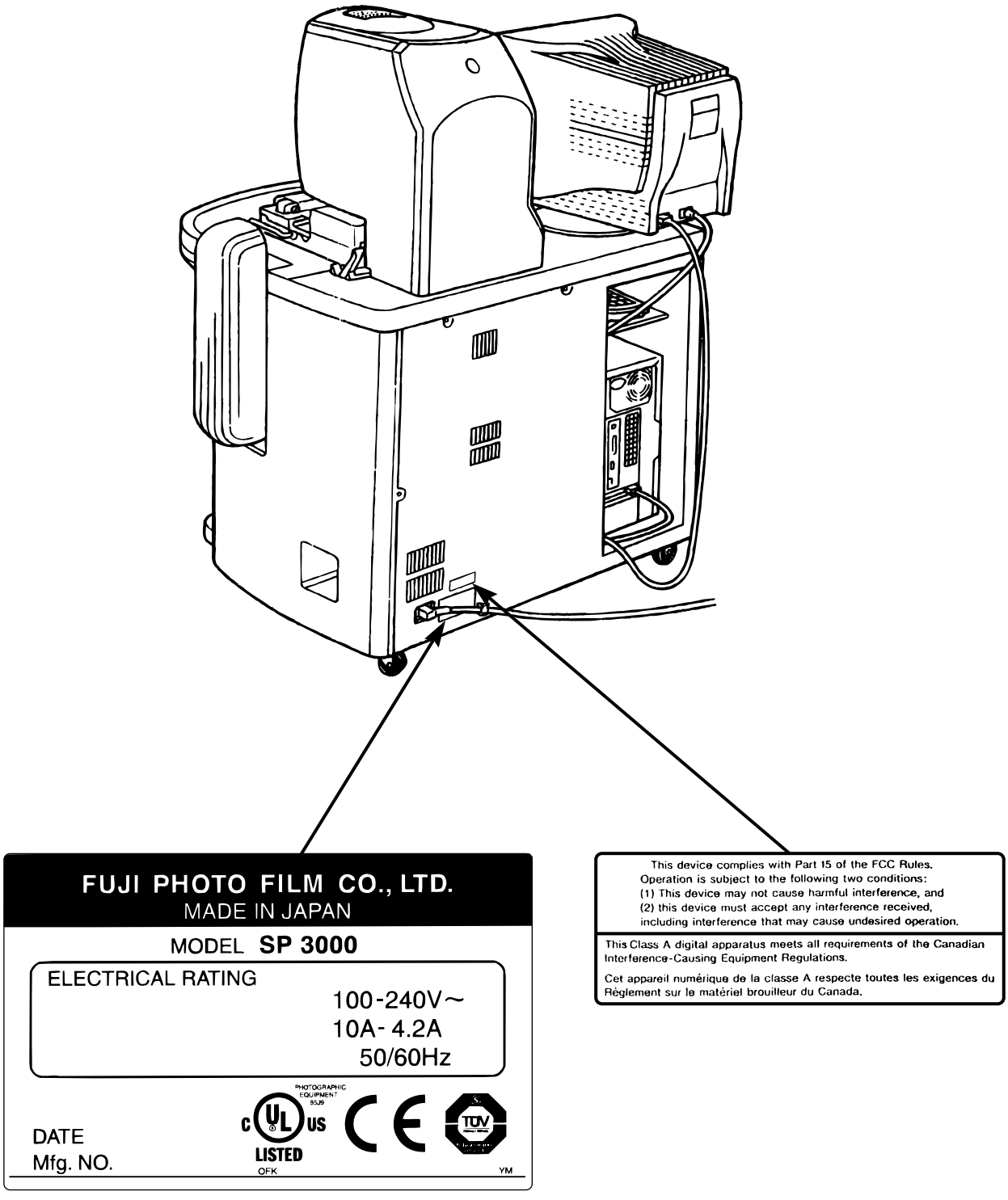
# 1.4 Certification and Identification Labels



## 1.4.1 Certification and Identification Label Locations on Scanner/Image Processor


FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
MODEL SP 3000
ELECTRICAL RATING
100-240V~
10A- 4.2A
50/60Hz
PHOTOGRAPHIC EQUIPMENT 9509
c UL us
LISTED
OFK
DATE
Mfg. NO.
YM
This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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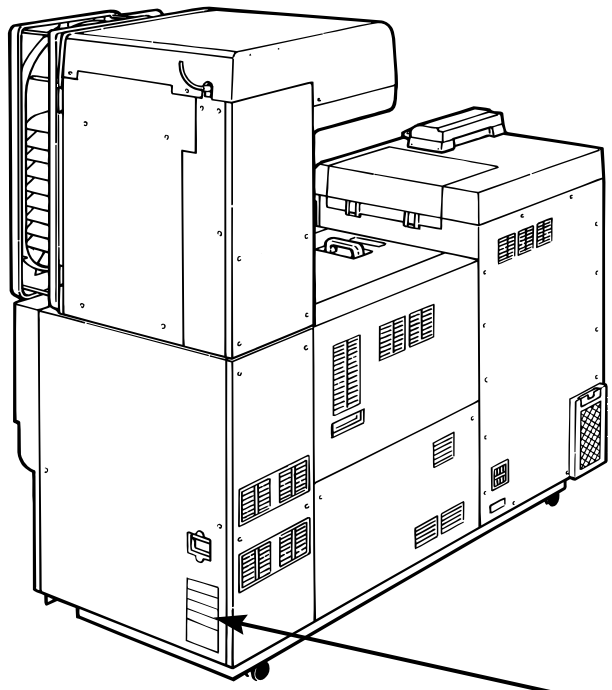
1.4.2

## 1.4.2 Certification and Identification Label Locations on Printer/Paper Processor



This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

"Covered by one or more of U.S. pats. 4,653,056, 4,656,635, 4,701,929, 4,756,003, 4,872,177, 5,315,613, 5,415,743, 5,446,750, 5,497,388, 5,506,860, 5,568,308, and 5,594,746."

CLASS 1 LASER PRODUCT IEC 825
LASER KLASSE 1 NACH IEC 825

**FUJI PHOTO FILM CO., LTD.**
798. MIYANODAI. KAISEI-MACHI
ASHIGARAKAMI-GUN. KANAGAWA-KEN 258-8538 JAPAN

MODEL **LP1500SC**

ELECTRICAL RATING

| | | |
|---|---|---|
| 210/220/230/240V~<br>24/ 24/ 24/ 24A<br>50/60Hz | 210/220/230/240V~<br>24/ 24/ 24/ 24A<br>365/380/400/415V3~N<br>14/ 14/ 14/ 14A<br>50/60Hz | 200/210/220/230/240V~<br>24/ 24/ 24/ 24/ 24A<br>200/210/220/230/240V3~<br>17/ 17/ 17/ 17/ 17A<br>365/380/400/415V3~N<br>14/ 14/ 14/ 14A<br>50/60Hz |

DATE
Mfg No. OFK YM

This Product complies with
21 CFR・Chapter 1. Subchapter J.

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# 2. MAIN SPECIFICATIONS

2.1 Main Specifications ..... 2-2
2.1.1 Scanner and Image Processor (SP-3000) ..... 2-2
2.1.2 Laser Printer/Paper Processor (LP1500SC/LP2000SC) ..... 2-3

2.2 Dimensions and Weight ..... 2-4
2.2.1 Scanner (SP-3000) ..... 2-4
2.2.2 Printer Processor (LP1500SC/LP2000SC) ..... 2-5

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# 2.1 Main Specifications

## 2.1.1 Scanner and Image Processor (SP-3000)

| Item | Specifications |
|---|---|
| **Type** | Floor-type, independent scanner |
| **Scanner section** | Newly developed Super CCD Honeycomb (Area type), with precision pixel shifting system |
| **Lens system** | Single focus lens; conjugate length variable system |
| **Light source** | High luminance LED type, diffusion box |
| **Film carrier** | (1) 135/IX240 automatic film carrier NC100AY (standard)<br>• 135F/P/HV/Half (optional): Color negative/black-white negative/color reversal; piece and strip film<br>• IX240: Color negative/color reversal; cartridge and strip film<br>(2) Multi-film carrier MFC10AY (optional)<br>110, IX240, 135F, 135P, 135 half, 135FP,<br>120/220 (6 ×4.5, 6 ×6, 6 ×7, 6 ×8, 6 ×9), 135 reversal mount |
| **Operation** | Operation keyboard, mouse and full keyboard (standard) |
| **Image processing** | Optimal color reproduction processing, gradation control, facial expression enhancement, hyper-tone processing, hyper sharpness processing, monotone finishing, retouching function (dust or scratches on film can be erased automatically in printing)<br>Optional:<br>Variety print service software: mounted prints, negative sheet index, soft focus, cross lighting function, red-eye auto correction |
| **Monitor** | 17-inch CRT color monitor (800 ×600 pixels)<br>6-frame or 1-frame display |
| **Front printing** | Printing possible for IX240 |
| **Index prints** | Possible for 135 and IX240 |
| **Processing capacity** | Scanner capacity (135 → 3R or 4R): 1,700 prints/hr<br>First print capacity with LP-2000SC (135 → 3R): 1,600 sheets/hr |
| **Power requirement** | 100 to 240V (50Hz/60Hz) single phase, automatic switching<br>100V: 10A max., 240V: 4.2A max. |
| **Dimensions** | 890mm (970mm with negative receiver)(W) ×770mm(D) ×1.208mm(H)<br>35.04in (38.19in with negative receiver)(W) ×30.31in(D) ×40.47in(H) |
| **Weight** | 118kg (260 lbs) with NC100AY and 17in CRT monitor |
| **Installation space** | 2.03m$^2$/2.43sq.yd. [1,135mm/44.68in(W) ×1,785mm/70.28in(D)] |

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### 2.1.2 Laser Printer/Paper Processor (LP1500SC/LP2000SC)

| Item | Specifications | |
|---|---|---|
| **Type** | Floor-type, normal-light operation (laser printer, processor, cutter, sorter in one unit). | |
| **Exposure system** | Scanning exposure system using RGB lasers (solid-state G and B lasers).<br>Pixel density: 300dpi, Sub-scanning luster density: 600dpi | |
| **Scanning speed** | Sub-scanning speed: 80mm/sec. | |
| **Paper transport system** | Full-auto sheet paper transport system | |
| **Magazine** | Two switchable paper magazine<br>Paper width: 8.9 to 15.2cm, length: 180m Paper width: 16.5 to 25.4cm, length: 90m | |
| **Paper width** | 8.9, 10.2, 11.7, 12.7, 15.2, 16.5, 20.3, 21.0, 25.4cm | |
| **Paper** | FUJICOLOR paper (silver-halide). | |
| **Print size** | 82.5 × 117mm to 254 × 381mm | |
| **Back printing** | Two 40-character lines of information from Advanced Photo System cartridge film;<br>One 40-character line for 135 and other film sizes | |
| **Front printing** | Time and date of photograph in black characters in lower-right corner on prints from Advanced Photo System (IX240) cartridge film. | |
| **Index print** | Color index print and normal prints can be printed from Advanced Photo System/135 (negative, positive, black and white) film in one pass. | |
| **Print condition setup** | Semi-automatic calibration by AC10Y calibrator | |
| **Operation panel** | 16 × 2 lines, LCD display with 8 keys | |
| **Counter** | Software controlled counting system | |
| **Processing system** | Multi-line sheet transport system | |
| **Processing speed** | LP1500SC | 1221mm/min. |
| | LP2000SC | 1652mm/min. |
| **Processing time** | Dry to dry: 4 min. | |
| **Processor capacity** | LP1500SC | Approx. 1,300 prints/hr. (3R) |
| | LP2000SC | Approx. 1,600 prints/hr. (3R) |
| **Processing chemicals** | New chemical system CP-48S (NC replenisher system) | |
| **Rack washing** | Auto-washing (removable) | |
| **Waste solution tank** | 12L × 1 | |
| **Sorter** | SU1100Y; sorting capacity: 11 orders of C/H/P-mixed format prints (optiional 25 sorter also available) | |
| **Power requirements** | AC200-240V (50/60Hz) Single-phase 25A, Three-phase three-wire and four-wire, 16A approx.6KVA. | |
| **Dimensions** | 1,708(W) × 830(D) × 1,850(H) mm/67.24(W) × 32.68(D) × 72.83(H) in. | |
| **Weight** | LP1500SC | Approx.470kg/1,036lbs (530kg/1,168lbs during actual operation) |
| | LP2000SC | Approx.480kg/1,058lbs (550kg/1,213lbs during actual operation) |
| **Installation space** | Approx. 1.40m$^2$/1.65sq.yd. | |

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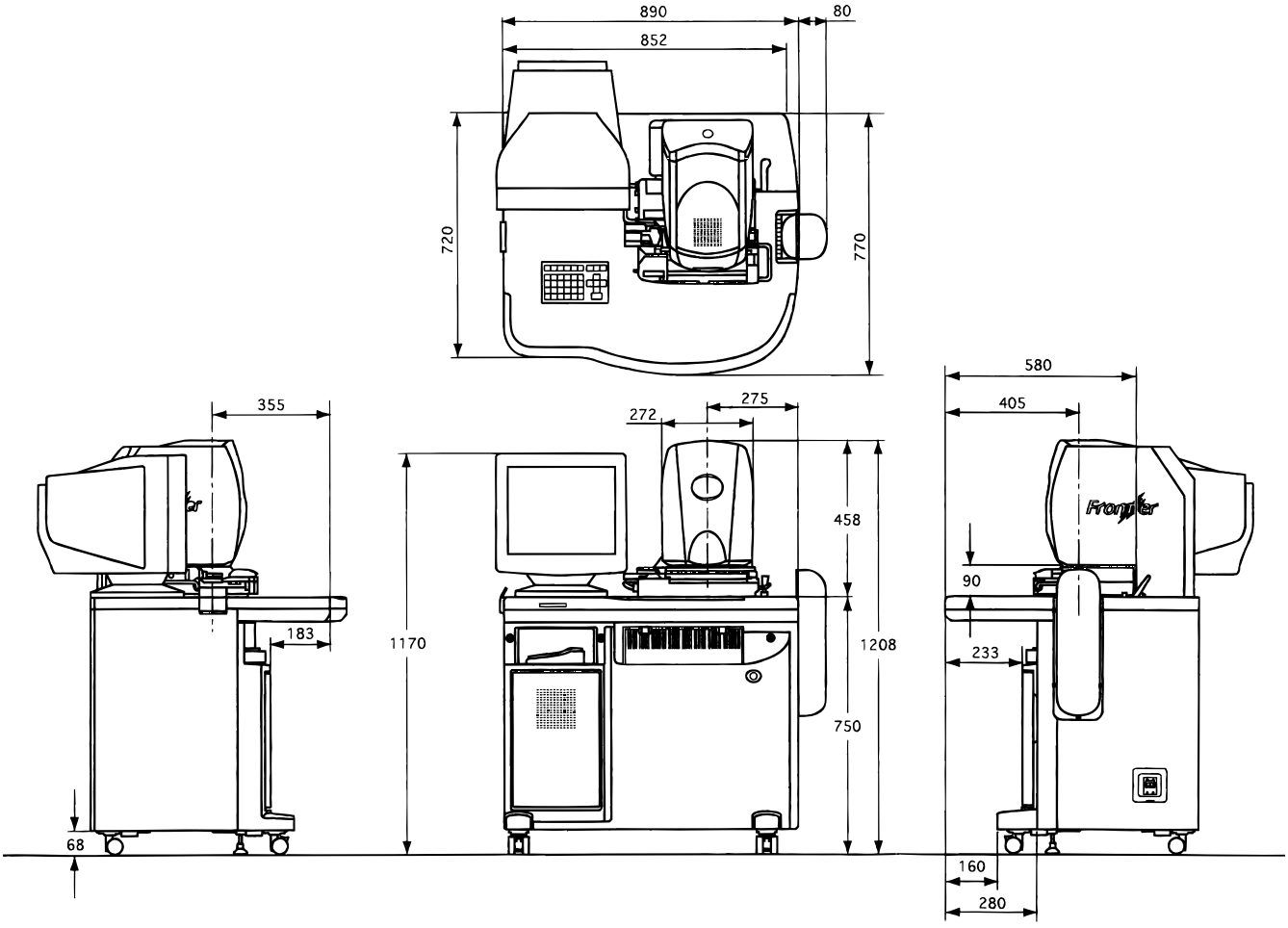
# 2.2 Dimensions and Weight

## 2.2.1 Scanner (SP-3000)

| | | |
|---|---|---|
| Dimensions | Length | 970 mm (38.19 inches) |
| | Width | 770 mm (30.32 inches) |
| | Height | 1,208 mm (47.56 inches) |
| Weight | When transported* | 82 kg (181 lbs) |
| | When operated | 118 kg (260 lbs) |

*: Without main control unit, monitor and film carriers. (Unit: mm)






ZII014

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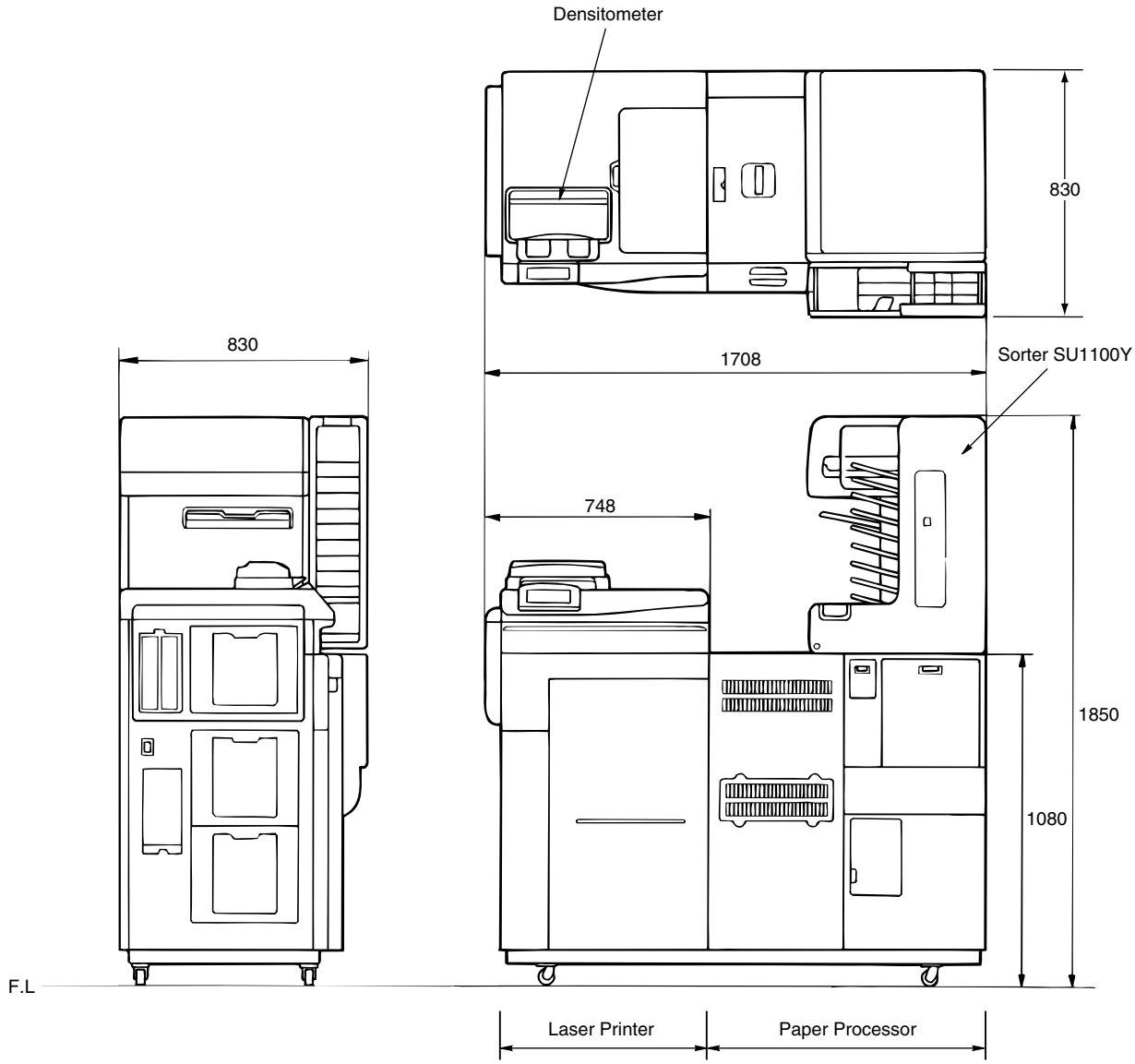
### 2.2.2 Printer Processor (LP1500SC/LP2000SC)

| | | | |
|---|---|---|---|
| Dimensions | Length | | 1,708 mm (67.24 inches) |
| | Width | | 830 mm (32.68 inches) |
| | Height | | 1,850 mm (72.83 inches) |
| Weight | When transported | LP1500SC | 470 kg (1,036 lbs) |
| | | LP2000SC | 480 kg (1,058 lbs) |
| | When operated | LP1500SC | 530 kg (1,168 lbs) |
| | | LP2000SC | 550 kg (1,213 lbs) |

(Unit: mm)






EZ1090

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# 3. OUTLINE


3.1 Scanner (SP-3000) ..... 3-2
3.1.1 Scanner Configuration ..... 3-2
3.1.2 Scanner/Light Source Section Configuration ..... 3-3
3.1.3 Auto Film Carrier NC100AY ..... 3-8
3.1.4 Multi-film Carrier MFC10AY (Optional) ..... 3-13
3.1.5 Carrier Base Section ..... 3-14
3.1.6 Circuit Board Location and Functions ..... 3-15
3.1.7 Parameter Stored in Circuit Board ..... 3-16
3.1.8 Scanner Block Diagram ..... 3-19
3.1.9 Image Processing Block Diagram ..... 3-20
3.1.10 Image Data Transfer ..... 3-21
3.1.11 Backup FD Parameter ..... 3-23

3.2 Printer Section (LP1500SC/LP2000SC) ..... 3-25
3.2.1 Paper Supply Section Configuration ..... 3-25
3.2.2 Paper Supply Section Feed Roller Configuration ..... 3-26
3.2.3 Exposure Section Configuration ..... 3-27
3.2.4 Laser Unit Configuration ..... 3-28
3.2.5 Distribution Section ..... 3-29
3.2.6 Processor Entrance Unit ..... 3-30
3.2.7 Printer Electrical Equipment Section Configurations ..... 3-31
3.2.8 Circuit Board Main Functions ..... 3-31
3.2.9 Printer Electrical Equipment Block Diagram ..... 3-32
3.2.10 CTL20 Circuit Board Block Diagram ..... 3-33

3.3 Processor Section (LP1500SC/LP2000SC) ..... 3-34
3.3.1 Processing Section Configuration ..... 3-34
3.3.2 Piping Diagram for Solution Circulation System ..... 3-35
3.3.3 Replenishment/Auto-washing Piping System ..... 3-37
3.3.4 Replenisher Cartridge Opening Mechanism ..... 3-38
3.3.5 Dryer Section Configuration ..... 3-39
3.3.6 Print Feeding Section/Sorter Configurations ..... 3-40
3.3.7 Processor Electrical Equipment Section Configuration ..... 3-41
3.3.8 Input Power Supply Section Parts and Circuit Functions ..... 3-42
3.3.9 Circuit Board Main Functions ..... 3-43
3.3.10 Processor Electrical Equipment Block Diagram ..... 3-43

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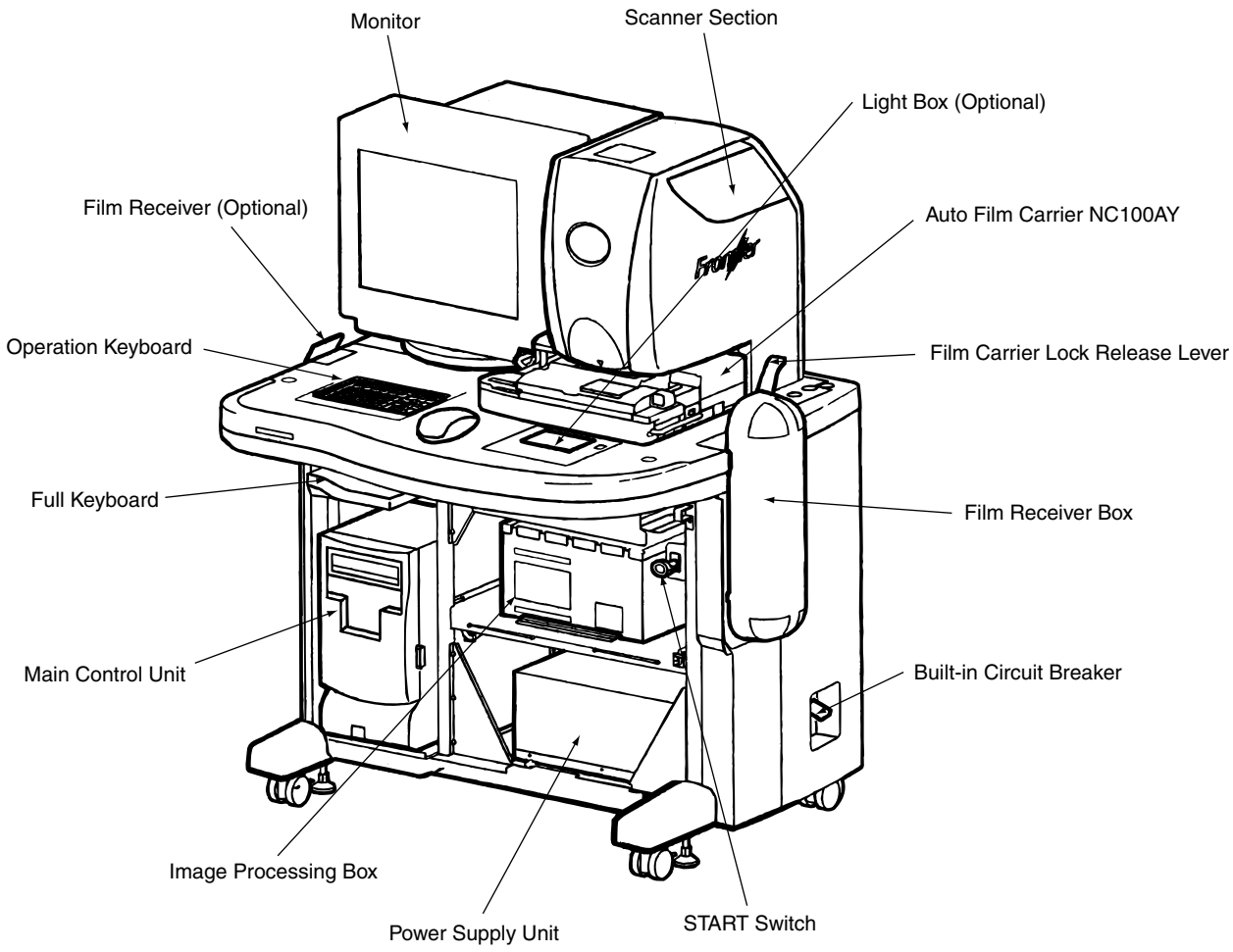
# 3.1 Scanner (SP-3000)

## 3.1.1 Scanner Configuration






ZII 440

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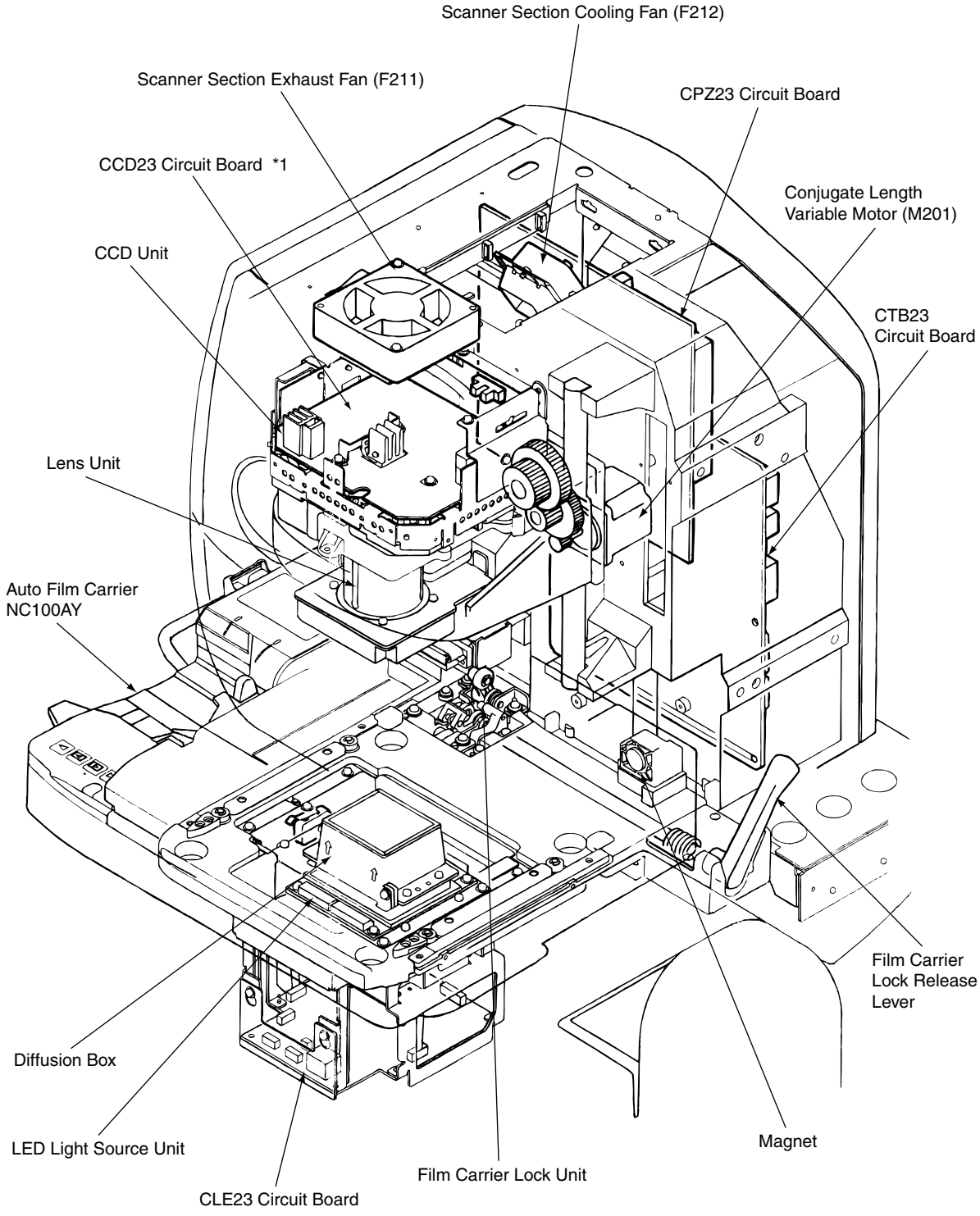
### 3.1.2 Scanner/Light Source Section Configuration




ZII436

*1: The CCD23 circuit board cannot be removed. Should be replaced as the CCD unit as necessary.

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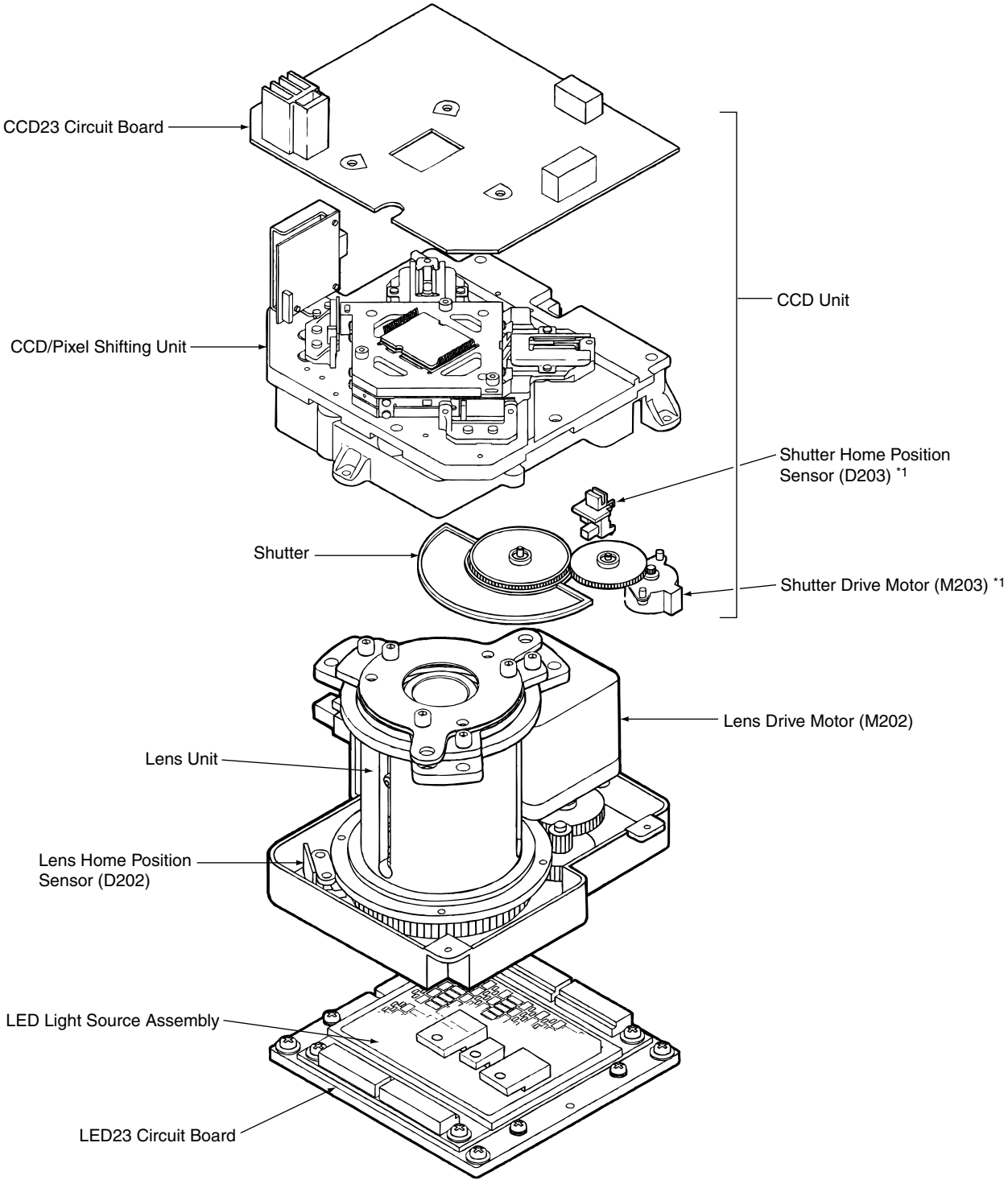


ZII 437

*1: The parts cannot be removed. Should be replaced as the CCD unit as necessary.

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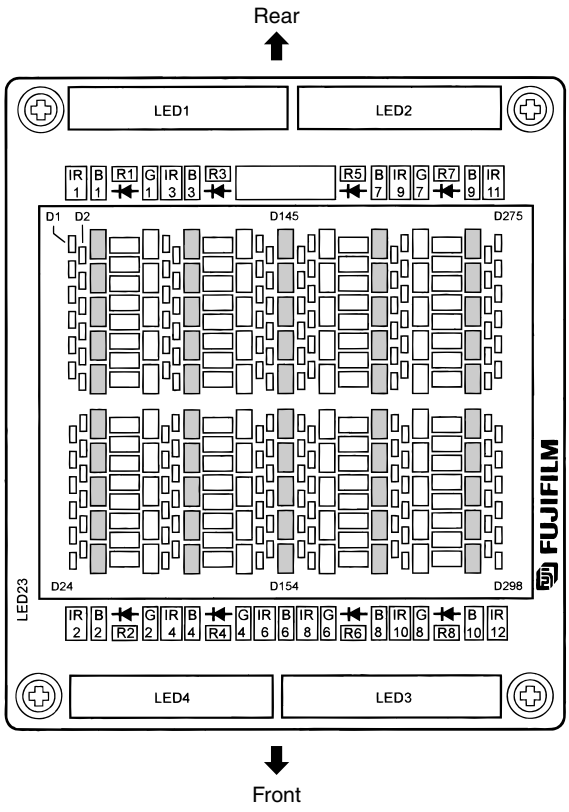
**• Light Source Section**

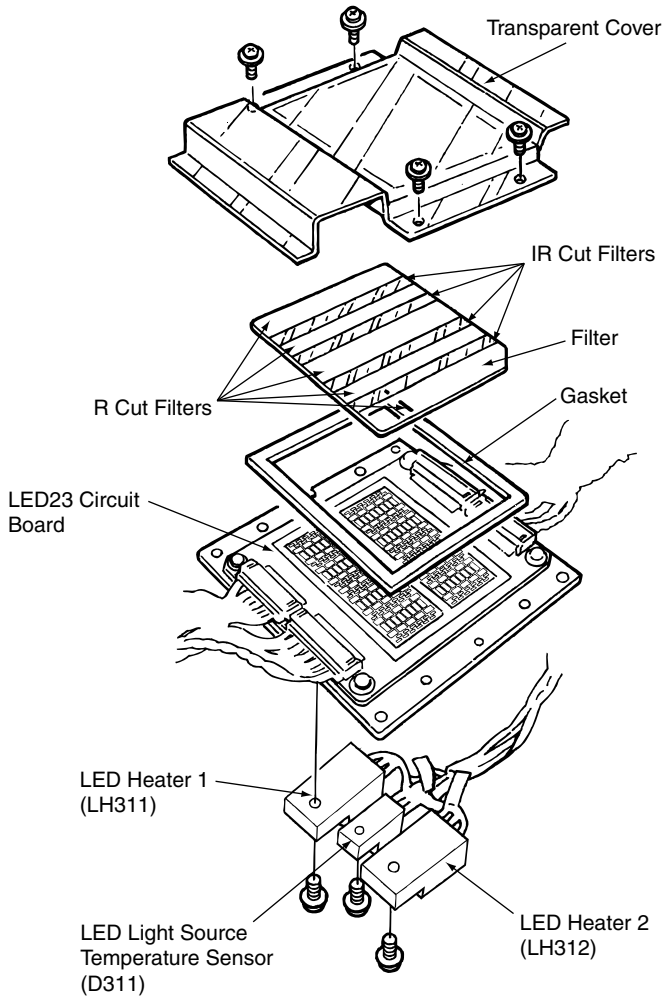
| | |
|---|---|
| **Light Source Type** | Four color LED, chip array arrangement (compact, high durability and supports retouch function) |
| **Temperature Control System** | Temperature is controlled to 40°C by means of temperature sensor (D311) and two heaters (LH311/LH312). |
| **Diffusion Box** | Diffusion plate, 135 and 120 boxes |
| **Retouching Function** | If film is scanned with infrared radiation that is cut out visible light, only scratch (abnormal refraction) or dust (vignetting, absorption) information is obtained without the film image. By using this information, the scratch or dust area of the RGB image information is automatically corrected. |

LED23 Circuit Board


Rear
LED1
LED2
IR 1 B 1 R1 G 1 IR 3 B 3 R3
R5 B 7 IR 9 G 7 R7 B 9 IR 11
D1 D2
D145
D275
FUJIFILM
LED23
D24
D154
D298
IR 2 B 2 R2 G 2 IR 4 B 4 R4 G 4 IR 6 B 6 IR 8 G 6 R6 B 8 IR 10 G 8 R8 B 10 IR 12
LED4
LED3
Front

ZII172

▭ : R-LED (8×8=64)
▯ : G-LED (5×8=40)
▮ : B-LED (5×10=50)
▯ : IR-LED (12×12=144)




ZII447

**• Lens Unit**

| | |
|---|---|
| **Type** | Single focus floating lens |
| **Focal Length (f)** | 46.36 to 47.12 mm |

**• CCD Unit**

CCD Unit Configuration

| | |
|---|---|
| **Shutter** | Close: For dark correction<br>Open: For pre-scanning, fine scanning and real time display |
| **CCD** | White and black area Honeycomb CCD |
| **Pixel Shifting Section** | Precisely controlled with piezoelectric element actuators and displacement sensors |

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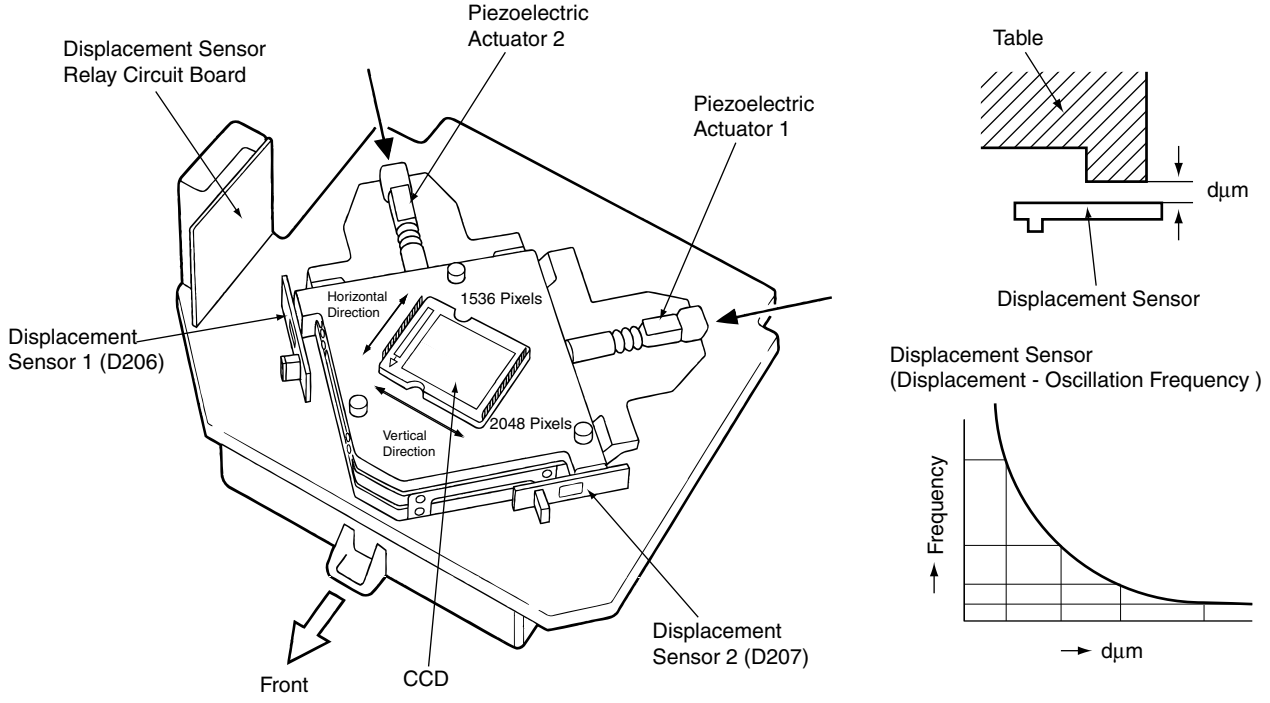
**• Pixel Shifting**

| | |
|---|---|
| **Type** | Piezoelectric actuator type with two-axis, multi-step control (1-shifting, 2-shifting, 4-shifting and 8-shifting) |
| **Shifting Length** | 0.0 to 8.1µm |
| **Displacement Control** | Feedback control using displacement sensors*1 |

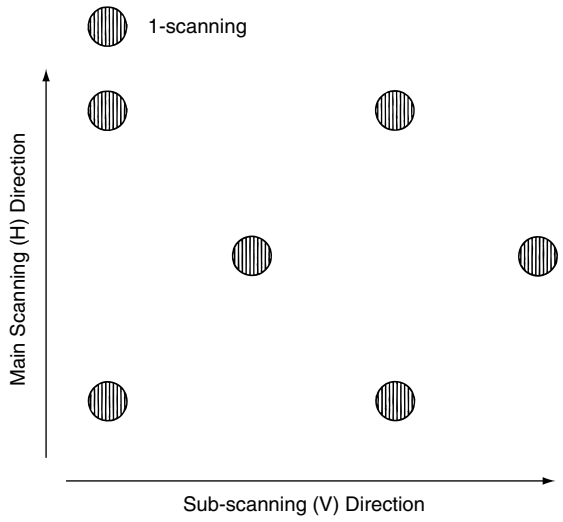
*1: When replacing the CCD unit, the displacement sensor parameter should be read out from an attached FD because it is the inherent in the CCD unit.



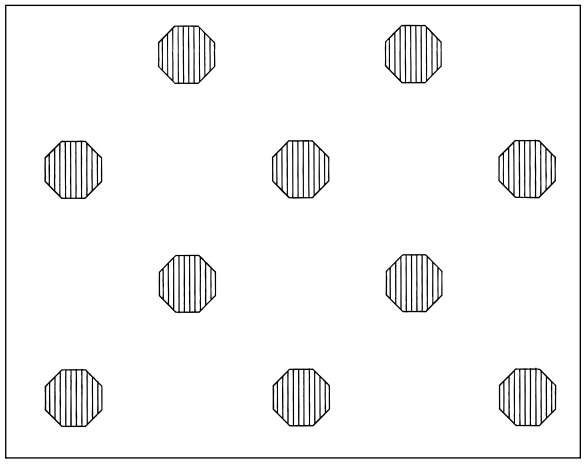

ZII348

| Scanning Times | Shifting Distance | Number of Pixels | Print Size |
|---|---|---|---|
| 1-scanning | 0.0 µm | 2048 ×1536 | Small sizes |
| 2-scanning | 2.7 µm | 2048 ×3072 | Middle sizes |
| 4-scanning | 5.4 µm | 4096 ×3072 | Middle sizes |
| 8-scanning | 8.1 µm | 8192 ×6144 | Large sizes |

**1-scanning**




ZII427



ZII431

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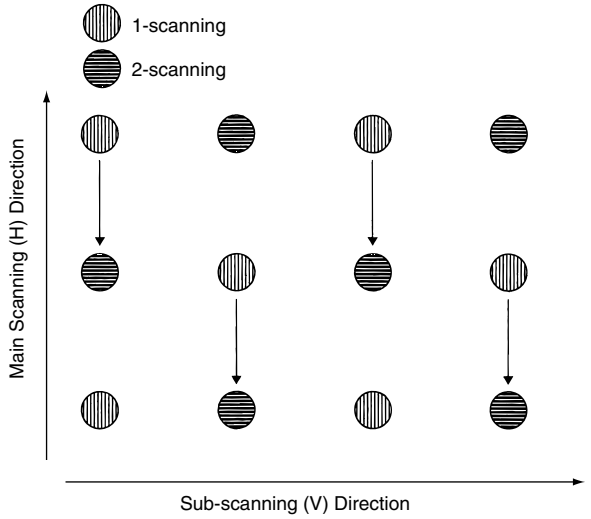
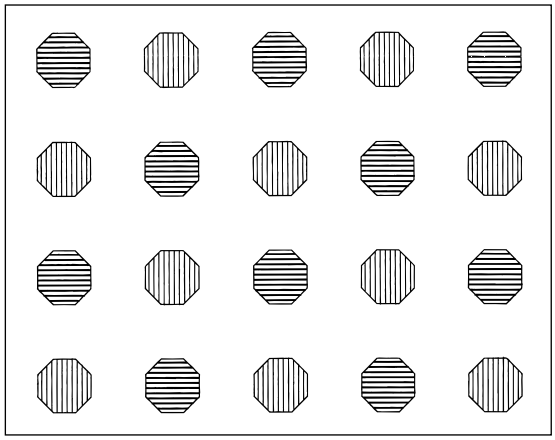
### 2-scanning

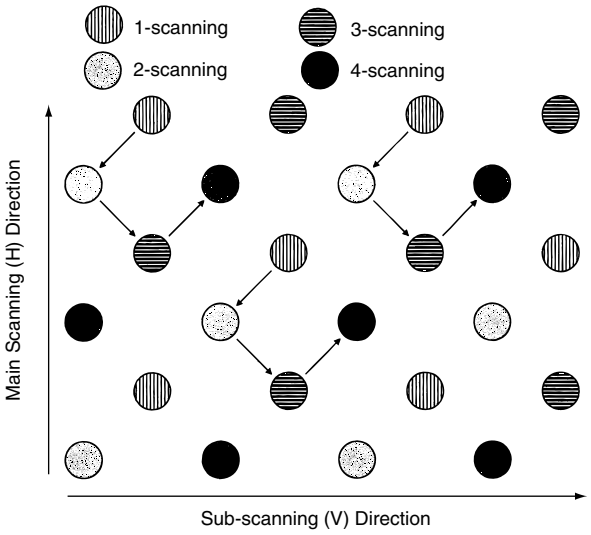



ZII428

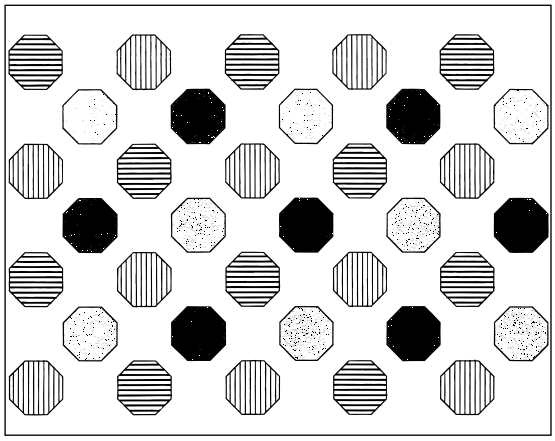


ZII432

### 4-scanning

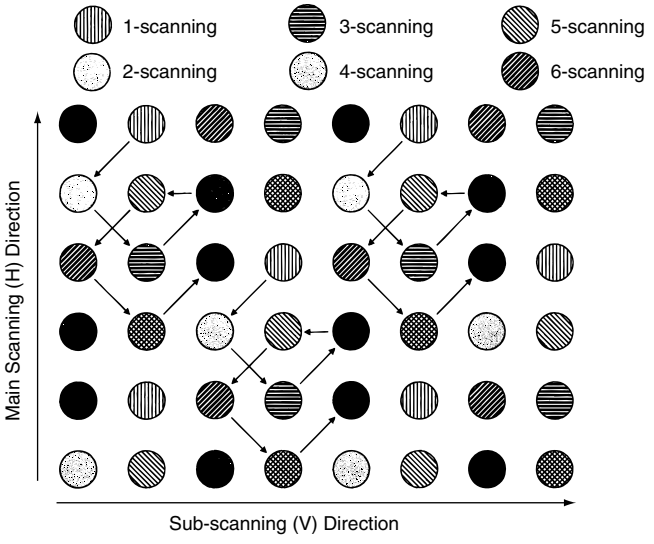



ZII429

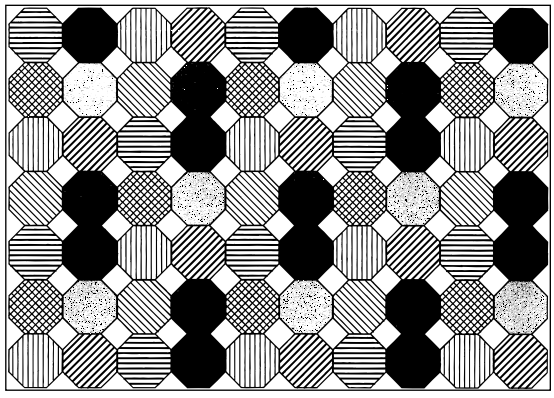


ZII433

### 8-scanning




ZII430



ZII434

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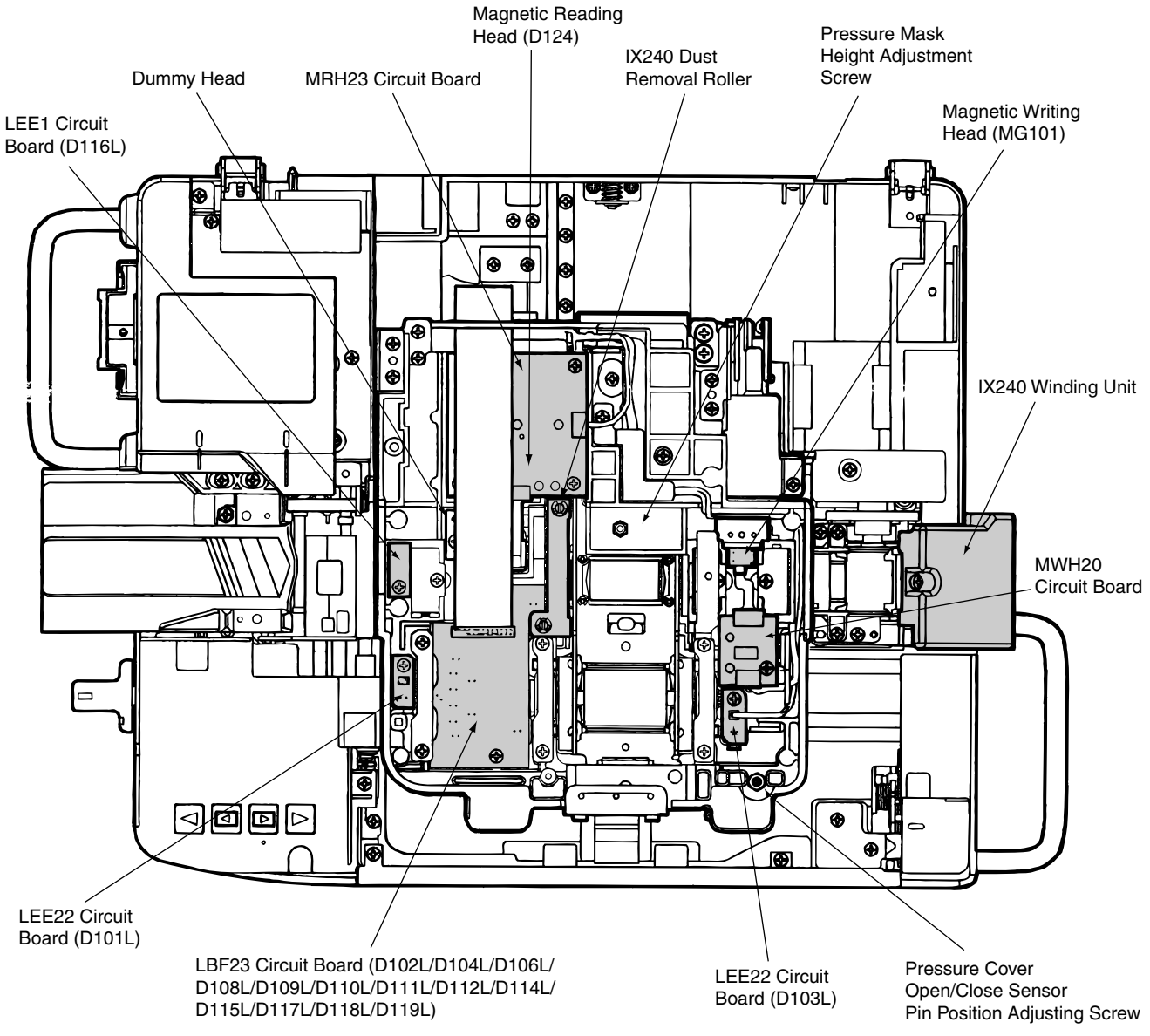
### 3.1.3 Auto Film Carrier NC100AY

**• Outline of NC100AY**

| | |
|---|---|
| **Film Feeding** | Dual use for 135 and IX240, automatic feeding |
| **Film Type** | • 135F/P/HV/Half (optional): Color negative/black-white negative/color reversal; piece and strip film<br>• IX240: Color negative/color reversal; cartridge and strip film |
| **Winding** | Forced winding |
| **Nest Section** | Upper loading |
| **Magnetic reading/Writing Heads** | Reading: One head<br>Writing: One head (for verification only) |

**• Pressure Cover Top-view**




Magnetic Reading Head (D124)
Pressure Mask Height Adjustment Screw
IX240 Dust Removal Roller
Dummy Head
MRH23 Circuit Board
LEE1 Circuit Board (D116L)
Magnetic Writing Head (MG101)
IX240 Winding Unit
MWH20 Circuit Board
LEE22 Circuit Board (D101L)
LBF23 Circuit Board (D102L/D104L/D106L/ D108L/D109L/D110L/D111L/D112L/D114L/ D115L/D117L/D118L/D119L)
LEE22 Circuit Board (D103L)
Pressure Cover Open/Close Sensor Pin Position Adjusting Screw

ZII441

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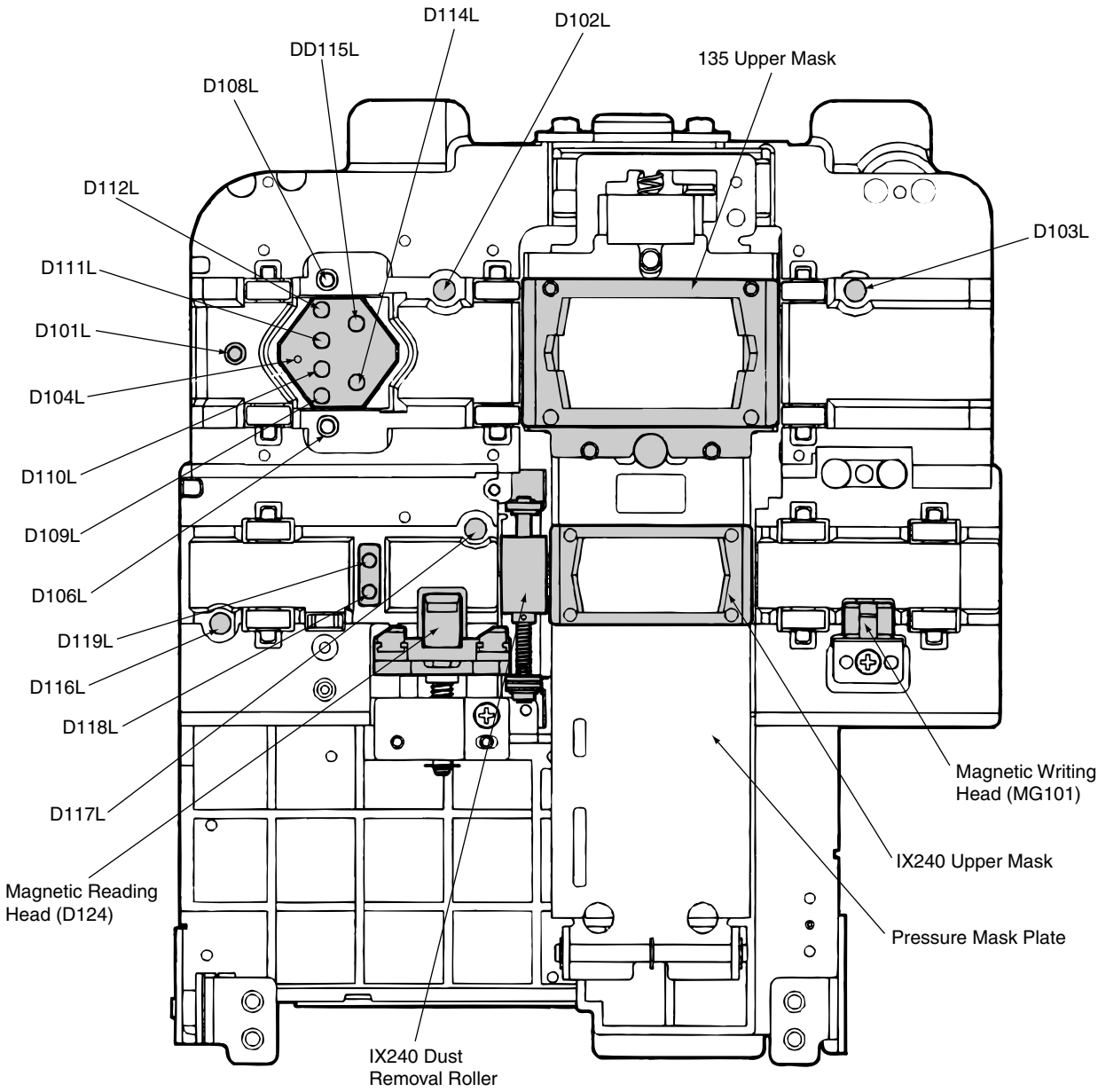
**• Pressure Cover Bottom-view**




ZII442

| Symbol | Name |
|---|---|
| D101L | 135 Leading End Sensor LED |
| D102L | 135 Upstream Perforation Sensor LED |
| D103L | 135 Downstream Perforation Sensor LED |
| D104L | 135 Check Tape Sensor LED |
| D106L | 135 Rear Bar Code Sensor LED |
| D108L | 135 Front Bar Code Sensor LED |
| D109L | 135 Rear Outer Frame Sensor LED |
| D110L | 135 Rear Inner Frame Sensor LED |

| Symbol | Name |
|---|---|
| D111L | 135 Front Inner Frame Sensor LED |
| D112L | 135 Front Outer Frame Sensor LED |
| D114L | 135 Rear Panorama Sensor LED |
| D115L | 135 Front Panorama Sensor LED |
| D116L | IX240 Leading End/Trailing End/Bar Code Sensor LED |
| D117L | IX240 Perforation Sensor LED |
| D118L | IX240 Front Unexposed Frame Sensor LED |
| D119L | IX240 Rear Unexposed Frame Sensor LED |

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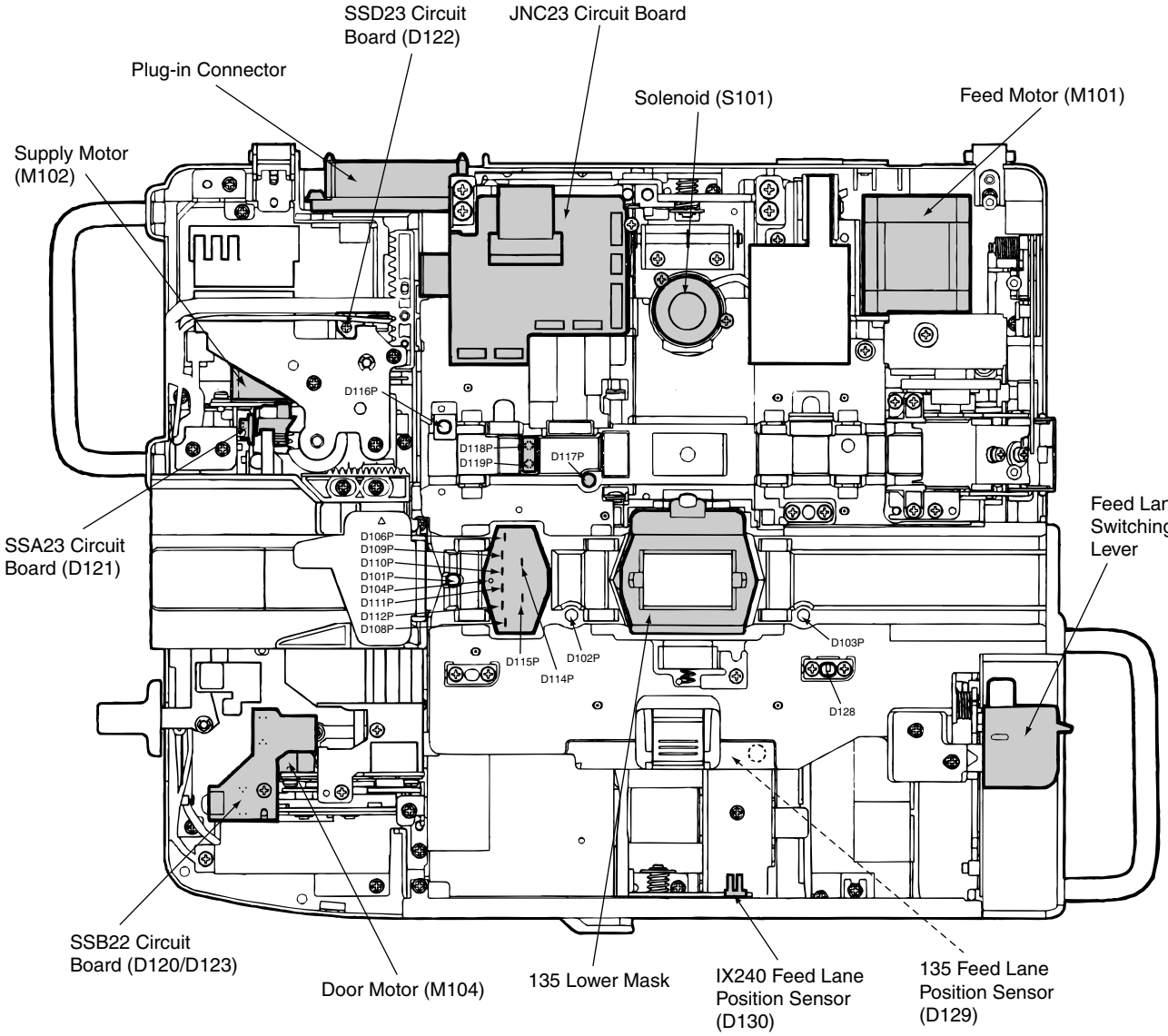
**• Lower Feed Section Top-view**




ZII443

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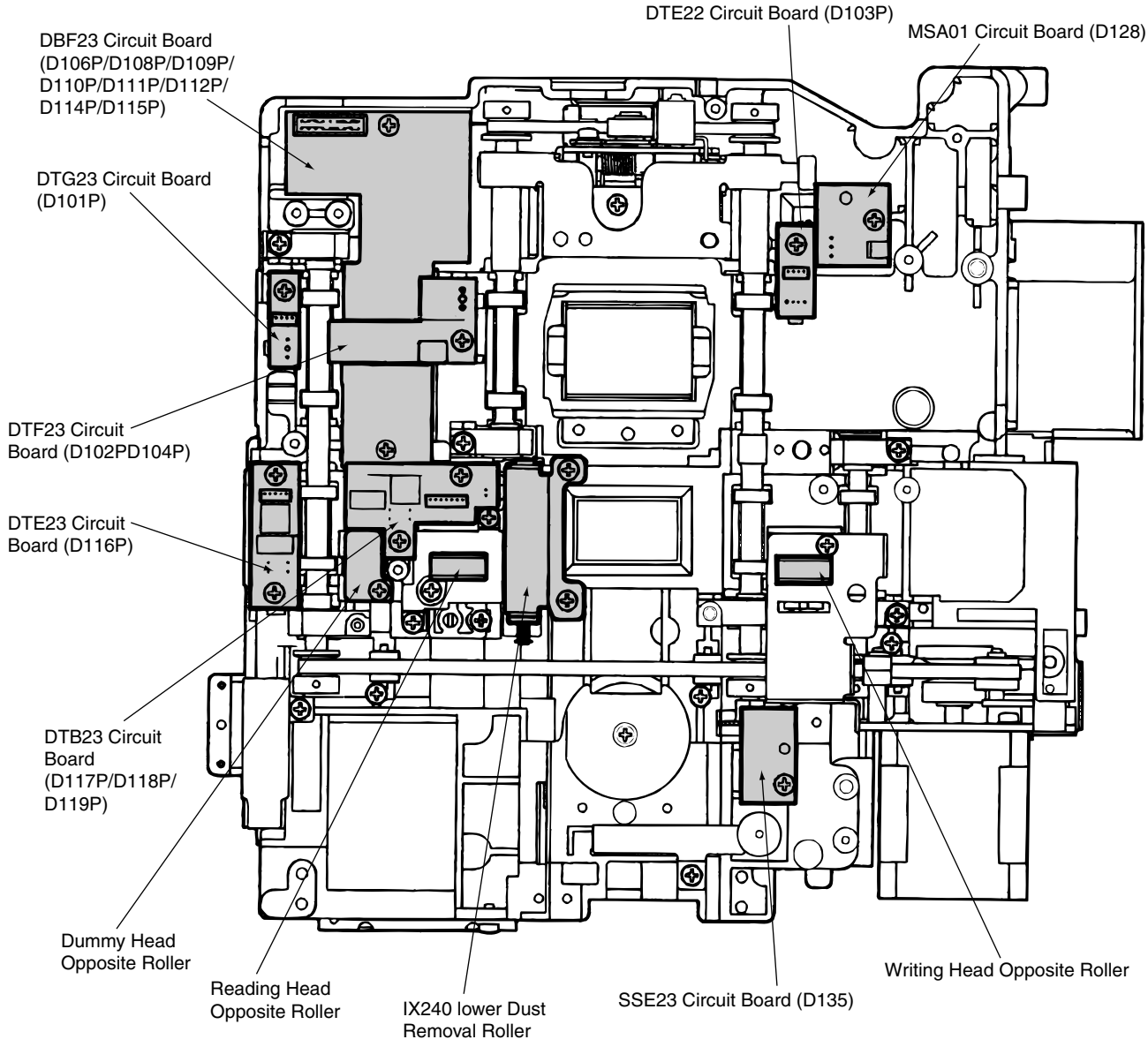
**• Lower Feed Section Bottom-view**


DTE22 Circuit Board (D103P)
MSA01 Circuit Board (D128)
DBF23 Circuit Board (D106P/D108P/D109P/ D110P/D111P/D112P/ D114P/D115P)
DTG23 Circuit Board (D101P)
DTF23 Circuit Board (D102PD104P)
DTE23 Circuit Board (D116P)
DTB23 Circuit Board (D117P/D118P/ D119P)
Dummy Head Opposite Roller
Reading Head Opposite Roller
IX240 lower Dust Removal Roller
SSE23 Circuit Board (D135)
Writing Head Opposite Roller

ZII445

| Symbol | Name |
|---|---|
| D101P | 135 Leading End Sensor |
| D102P | 135 Upstream Perforation Sensor |
| D103P | 135 Downstream Perforation Sensor |
| D104P | 135 Check Tape Sensor |
| D106P | 135 Rear Bar Code Sensor |
| | 135 Rear Outer Bar Code Sensor |
| D108P | 135 Front Bar Code Sensor |
| | 135 Front Outer Bar Code Sensor |
| D109P | 135 Rear Outer Frame Sensor |
| D110P | 135 Rear Inner Frame Sensor |
| D111P | 135 Front Inner Frame Sensor |
| D112P | 135 Front Outer Frame Sensor |

| Symbol | Name |
|---|---|
| D114P | 135 Rear Panorama Sensor |
| D115P | 135 Front Panorama Sensor |
| D116P | IX240 Leading End/Trailing End/Bar Code Sensor |
| D117P | IX240 Perforation Sensor |
| D118P | IX240 Front Unexposed Frame Sensor |
| D119P | IX240 Rear Unexposed Frame Sensor |
| D120 | Door Open Close Sensor |
| D121 | IPI Sensor |
| D122 | Supply Motor Home Position Sensor |
| D123 | Cartridge Set Sensor |
| D135 | Feed Roller Rotation Sensor |

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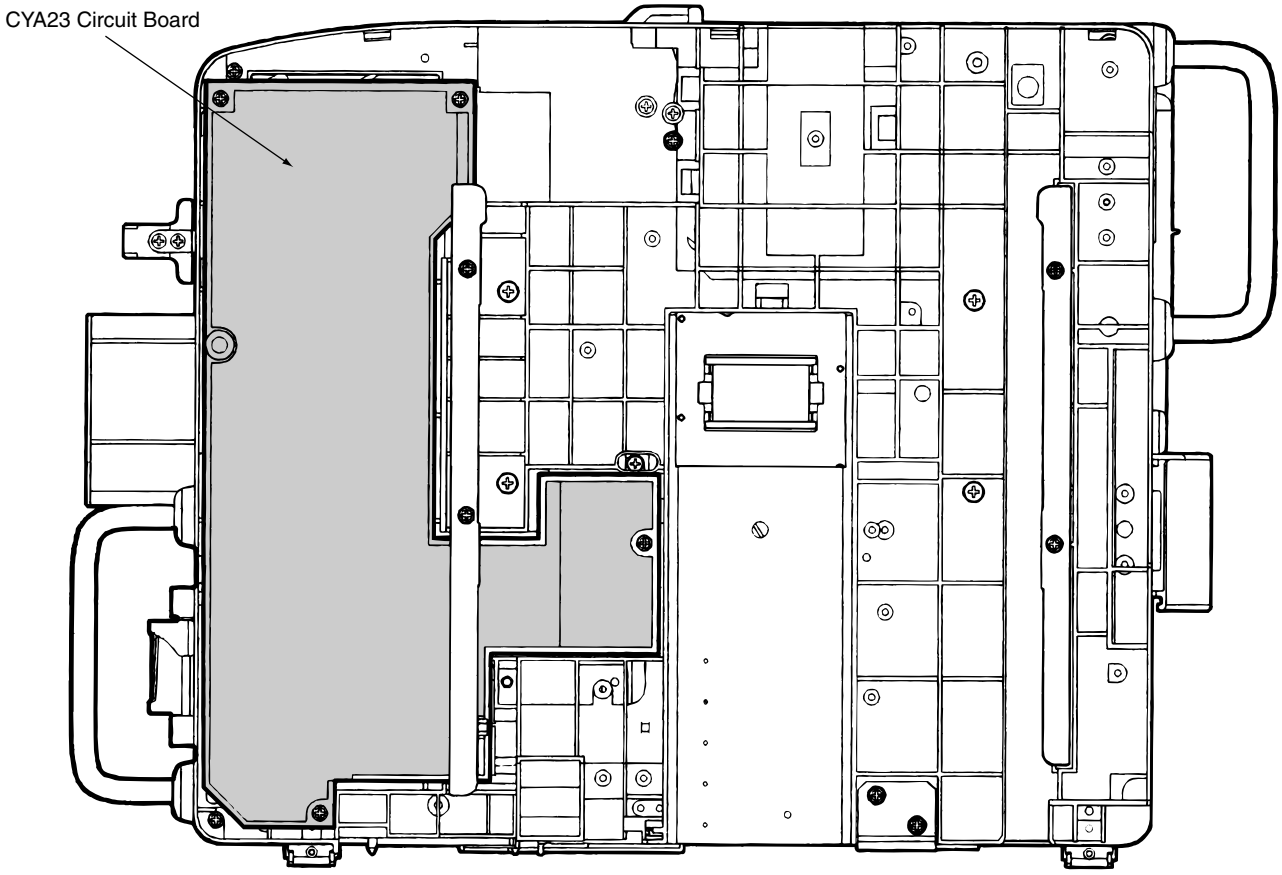
**• Carrier Bottom-view**




ZII444

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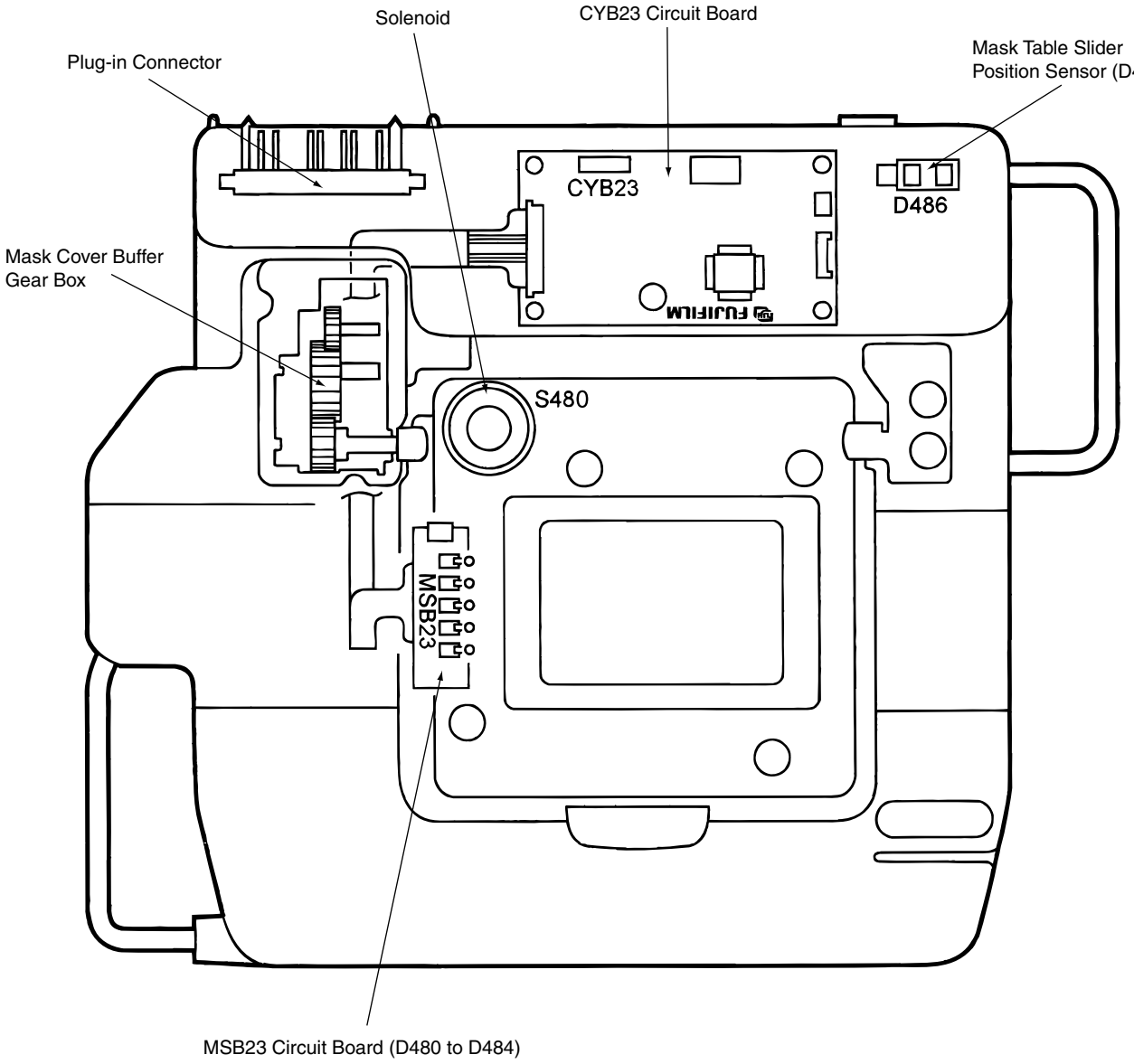
### 3.1.4 Multi-film Carrier MFC10AY (Optional)

| | |
|---|---|
| **Film Feeding** | Manual feeding |
| **Film Type** | Negative and reversal |
| **Film Masks** | 110, IX240, 135F, 135P, 135H, 135FP,<br>120/220 (6 ×4.5, 6 ×6, 6 ×7, 6 ×8, 6 ×9),<br>135/iX240 reversal mount |




ZII211

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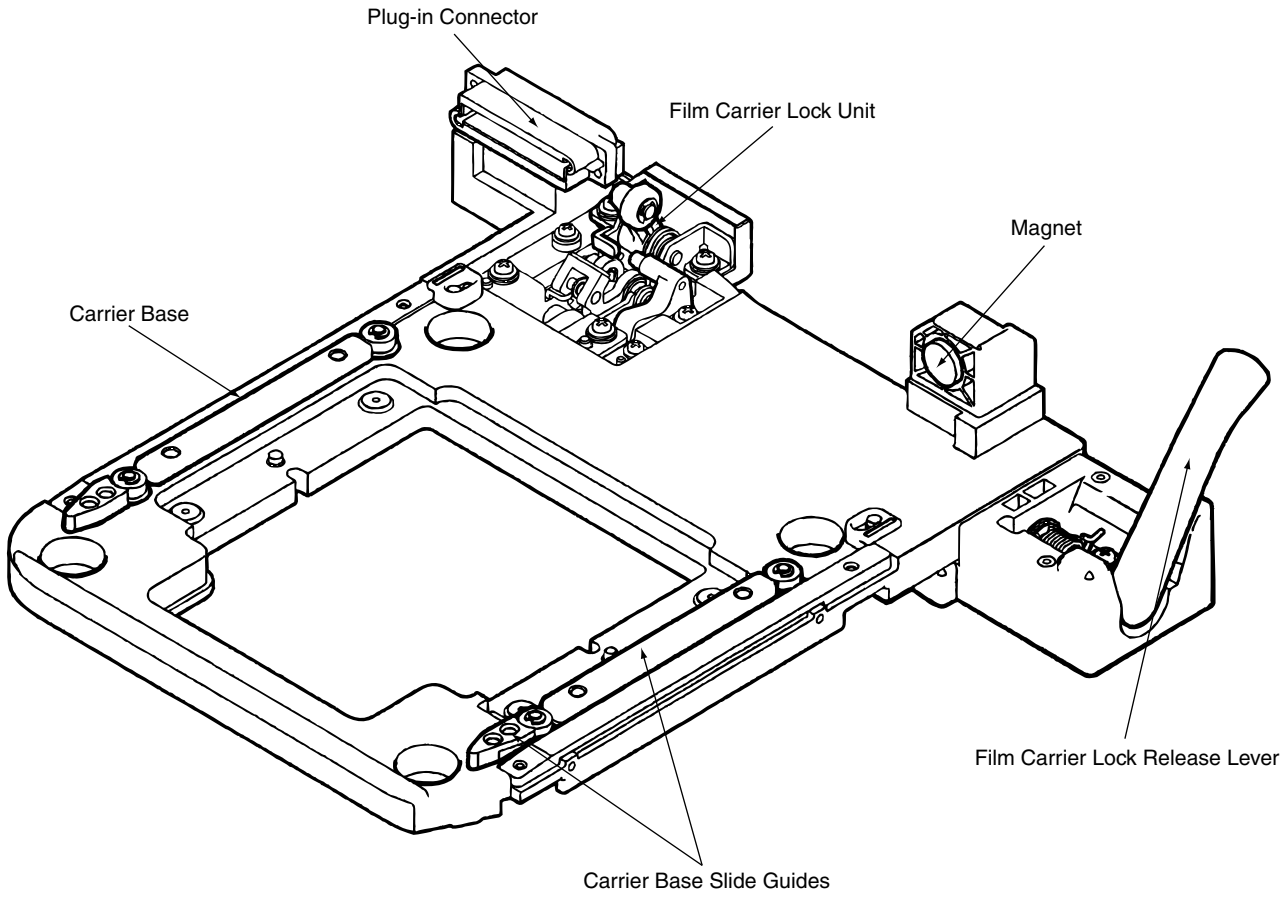
### 3.1.5 Carrier Base Section




ZII446

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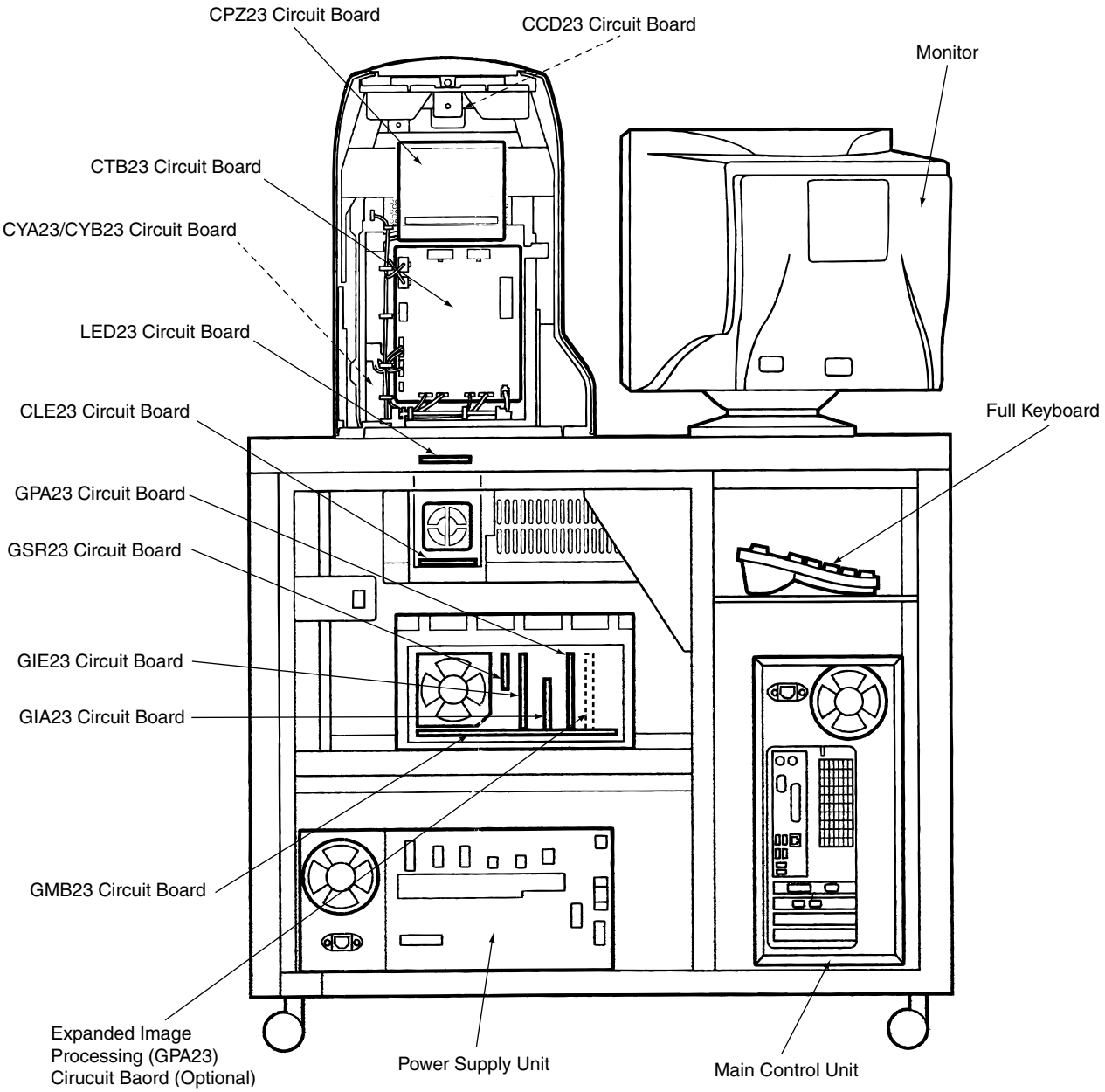
### 3.1.6 Circuit Board Location and Functions




ZII438

| Circuit Boards | Functions |
|---|---|
| CCD23 | CCD and CCD output amplifier |
| CLE23 | LED light source control |
| CPZ23 | Pixel shifting control |
| CTB23 | Scanner section mechanical control |
| CYA23 | Auto film carrier NC100AY control |
| CYB23 | Multi film carrier MFC10AY control |
| GIA23 | AD converter, CCD correction and scanner light source interface |
| GIE23 | IEEE1394 interface |
| GMB23 | Image processing section CPU circuit board |
| GPA23 | Image processing |
| GSR23 | Mechanical control interface |

## 3.1.7 Parameter Stored in Circuit Board

| Unit | Circuit Board | Parameter | Data Writing into Main Control Unit | | Data Writing into Circuit Board | | File Name |
|---|---|---|---|---|---|---|---|
| Scanner | CTB23 | Lens ID, focal length and registration date | When the [Storage] button for "CTB23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From CTB23 to main control unit)" | When the [Regist.] button is clicked in Menu 0344 "Lens Registration". (Displayed data to main control unit) | When the [Reading] button for "CTB23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From main control unit to CTB23) | When the [Regist.] button is clicked in Menu 0344 "Lens Registration". (Displayed data to CTB23) | LEN_ID.BIN |
| | | Optical magnification calibration and registration date | | When the [Measure] and [Regist.] buttons are clicked in Menu 0346 "Optical Magnification Calibration". (Displayed data to main control unit) | | When the [Measure] and [Regist.] buttons are clicked in Menu 0346 "Optical Magnification Calibration". (Displayed data to CTB23) | MAG_CALIB.BIN |
| | | Focus calibration and registration date | | When the [Create table] and [Regist.] buttons are clicked in Menu 0347 "Focus Calibration". (Displayed data to main control unit) | | When the [Create table] and [Regist.] buttons are clicked in Menu 0347 "Focus Calibration". (Displayed data to CTB23) | FOC_CALIB.BIN |
| | CLE23 | LED light amount adjustment current (scanning and film position adjustment) and registration date | ① When the [Storage] button for "CLE23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From CLE23 to main control unit)<br>② When the [Regist.] button is clicked in Menu 0349 "LED Light Amount Adjustment". (Displayed data to main control unit) | | ① When the [Reading] button for "CLE23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From main control unit to CLE23)<br>② When the [Regist.] button is clicked in Menu 0349 "LED Light Amount Adjustment". (Displayed data to CLE23) | | LED_CUR.BIN |
| | CPZ23 | Piezoelectric displacement correction factor and adjustment date | ① When the [Storage] button for "CPZ23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From CPZ23 to main control unit)<br>② <After CCD Unit Replacement><br>When the [FD reading] button for "CPZ23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From FD supplied with CCD to main control unit) | | ①When the [Reading] button for "CPZ23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From main control unit to CPZ23)<br>②<After CCD Unit Replacement><br>When the [FD reading] button for "CPZ23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From FD supplied with CCD to CPZ23) | | PZR_ADJ.BIN |
| | CCD23 | AD timing and registration date | When the [Storage] button for "CCD23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From CCD23 to main control unit) | When the [Regist.] button is clicked after executing "AD timing adjustment" in Menu 0351 "CCD Adjustment". (From image data to main control unit) | When the [Reading] button for "CCD23" is clicked in Menu 0350 "Scanner Parameter Check/Update". (From main control unit to CCD23) | When the [Regist.] button is clicked after executing "AD timing adjustment" in Menu 0351 "CCD Adjustment". (From image data to CCD23) | AD_TIMIMG.BIN |
| | | OFD voltage and registration date | | When the [Regist.] button is clicked after executing "OFD voltage adjustment" in Menu 0351 "CCD Adjustment". (From image data to main control unit) | | When the [Regist.] button is clicked after executing "OFD voltage adjustment" in Menu 0351 "CCD Adjustment". (From image data to CCD23) | OFD_VOLT.BIN |
| Carrier | CYA23 | NC100AY machine data | When the [HD backup] button is clicked in Menu 0450 "Film Carrier ID Setup/ Delete". (From CYA23 to main control unit) | ①When the [HD writing] button is clicked in Menu 0451 "NC100AY Machine Data Setup". (Displayed data to main control unit)<br>②When the [HD writing] button is clicked in Menu 0443 "NC100AY Sensor Calibration Information". (Displayed data to main control unit) | When the [HD download] button is clicked in Menu 0450 "Film Carrier ID Setup/ Delete". (From main control unit to CYA23) | ①When the [Flash ROM writing] button is clicked in Menu 0451 "NC100AY Machine Data Setup". (Displayed data to CYA23)<br>②When the [Flash ROM writing] button is clicked in Menu 0443 "NC100AY Sensor Calibration Information". (Displayed data to CYA23)<br>③When the [Set] button is clicked in Menu 0447 "NC100AY Installation Information Setup". (Displayed data to CYA23) | CyAxxxxxxxxAj.dat |



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| Unit | Circuit Board | Parameter | Data Writing into Main Control Unit | | Data Writing into Circuit Board | | File Name |
|---|---|---|---|---|---|---|---|
| Carrier | CYA23 | NC100AY working information | When the [HD backup] button is clicked in Menu 0450 “Film Carrier ID Setup/ Delete”. (From CYA23 to main control unit) | <Writing into Main Control Unit during Printing Operation><br>• At system starting up with carrier installed (From work memory to main control unit)<br>• At system shutdown with carrier installed (From work memory to main control unit)<br>• At carrier installation (From work memory to main control unit)<br>• At carrier removal (From work memory to main control unit)” | When the [HD download] button is clicked in Menu 0450 “Film Carrier ID Setup/ Delete”. (From main control unit to CYA23) | <Writing into CYA23 during Printing Operation><br>• At system starting up with carrier installed (From work memory to CYA23)<br>• At system shutdown with carrier installed (From work memory to CYA23)<br>• At carrier installation (From work memory to CYA23)” | CyAxxxxxxxxRun.dat |
| | | NC100AY production information | | <Writing into Main Control Unit during Printing Operation><br>• At system starting up with carrier installed (From work memory to main control unit)<br>• At system shutdown with carrier installed (From work memory to main control unit)<br>• At carrier installation (From work memory to main control unit) | | <Writing into CYA23 during Printing Operation><br>• At system starting up with carrier installed (From work memory to CYA23)<br>• At system shutdown with carrier installed (From work memory to CYA23)<br>• At carrier installation (From work memory to CYA23) | CyAxxxxxxxxPro.dat |
| | | NC100AY long term fluctuation data | | <Writing into Main Control Unit during Printing Operation><br>• At system startup/shutdown (From work memory to main control unit) | | <Writing into CYA23 during Printing Operation><br>• At system startup/shutdown with carrier installed (From work memory to CYA23) | CyAxxxxxxxxLngEcd.datCyAxxxxxxxxLngEcdX.dat |
| | | NC100AY error information | | <Writing into Main Control Unit during Printing Operation><br>• At system startup/shutdown with carrier installed (From work memory to main control unit) | | <Writing into CYA23 during Printing Operation><br>• At system startup/shutdown with carrier installed (From work memory to CYA23) | CyAxxxxxxxxErr.dat |
| | | NC100AY feed failure stop position information | | <Writing into Main Control Unit during Printing Operation><br>• At system startup/shutdown with carrier installed (From work memory to main control unit) | | <Writing into CYA23 during Printing Operation><br>• At system startup/shutdown with carrier installed (From work memory to CYA23) | CyAxxxxxxxxLngJam.dat |
| | CYB23 | MFC10AY machine data | No data in the main control unit | | When the [Set] button is clicked in Menu 0447 “MFC10AY Installation Information Setup”. (Displayed data to CYB23) | | CyMxxxxxxxxAj.dat |
| | | MFC10AY working information | <Writing into Main Control Unit during Printing Operation><br>• At system starting up with carrier installed (From work memory to main control unit)<br>• At system shutdown with carrier installed (From work memory to main control unit)<br>• At carrier installation (From work memory to main control unit)<br>• At carrier removal (From work memory to main control unit)” | | <Writing into CYB23 during Printing Operation><br>• At system starting up with carrier installed (From work memory to CYB23)<br>• At system shutdown with carrier installed (From work memory to CYB23)<br>• At carrier installation (From work memory to CYB23) | | CyMxxxxxxxxRun.dat |

Work Memory = RAM used by software operated in GMB23 circuit board





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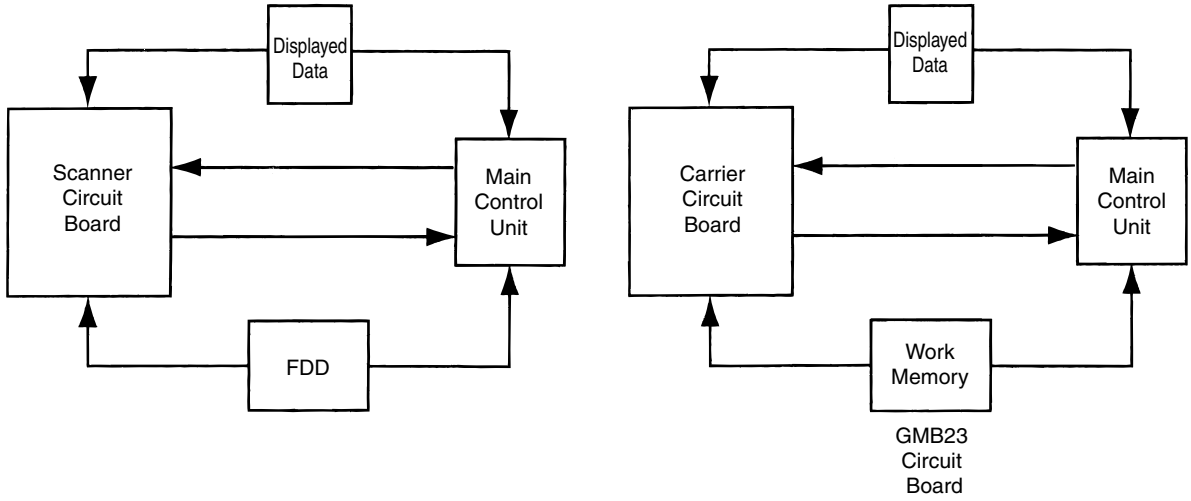


Displayed Data: Setup data or measured values displayed in the “Setup and Maintenance” menu screen.
Work Memory: RAM used by software operated in the GMB23 circuit board.
FDD: Parameter floppy disk attached to the replacement CCD unit

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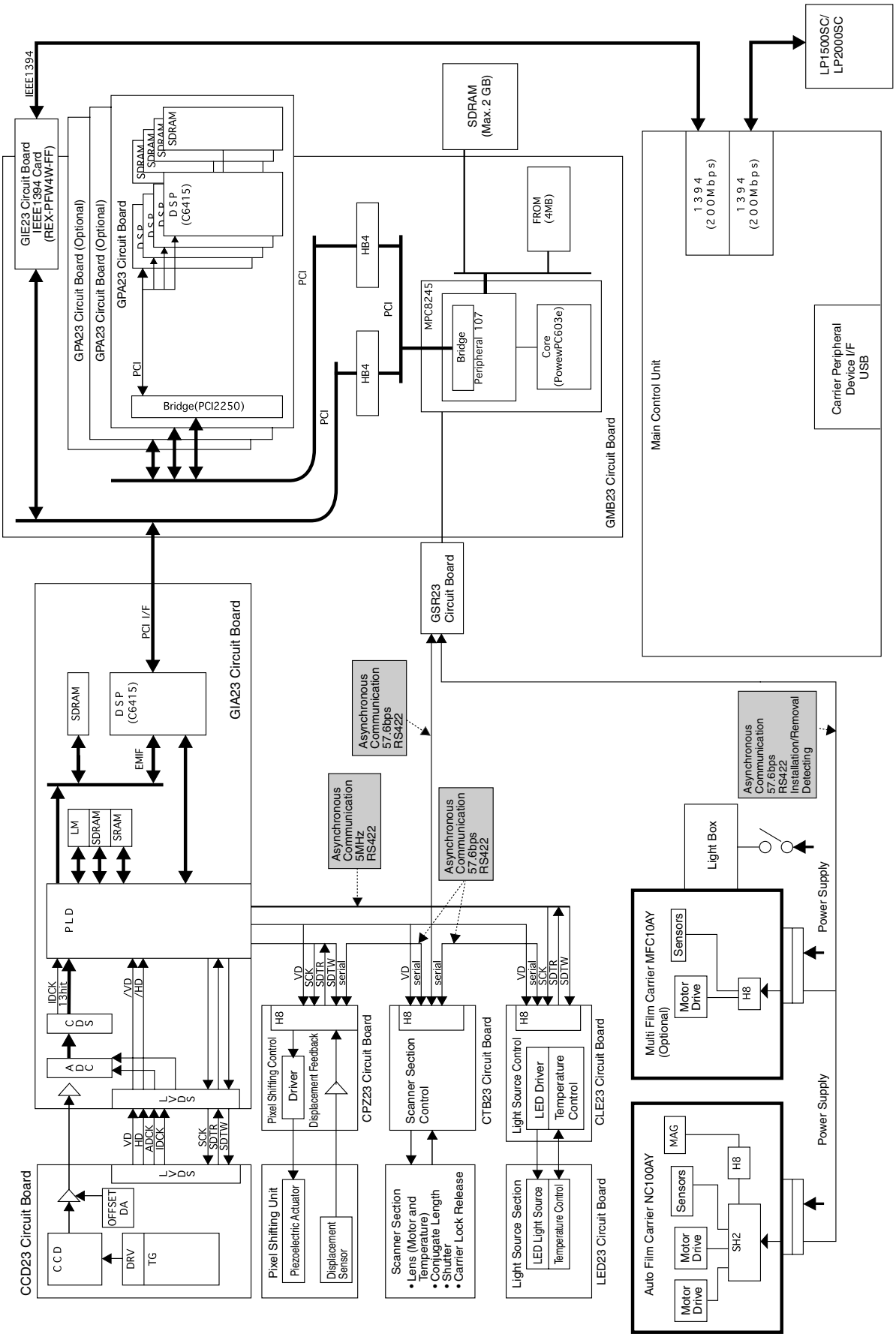
### 3.1.8 Scanner Block Diagram




ZII090

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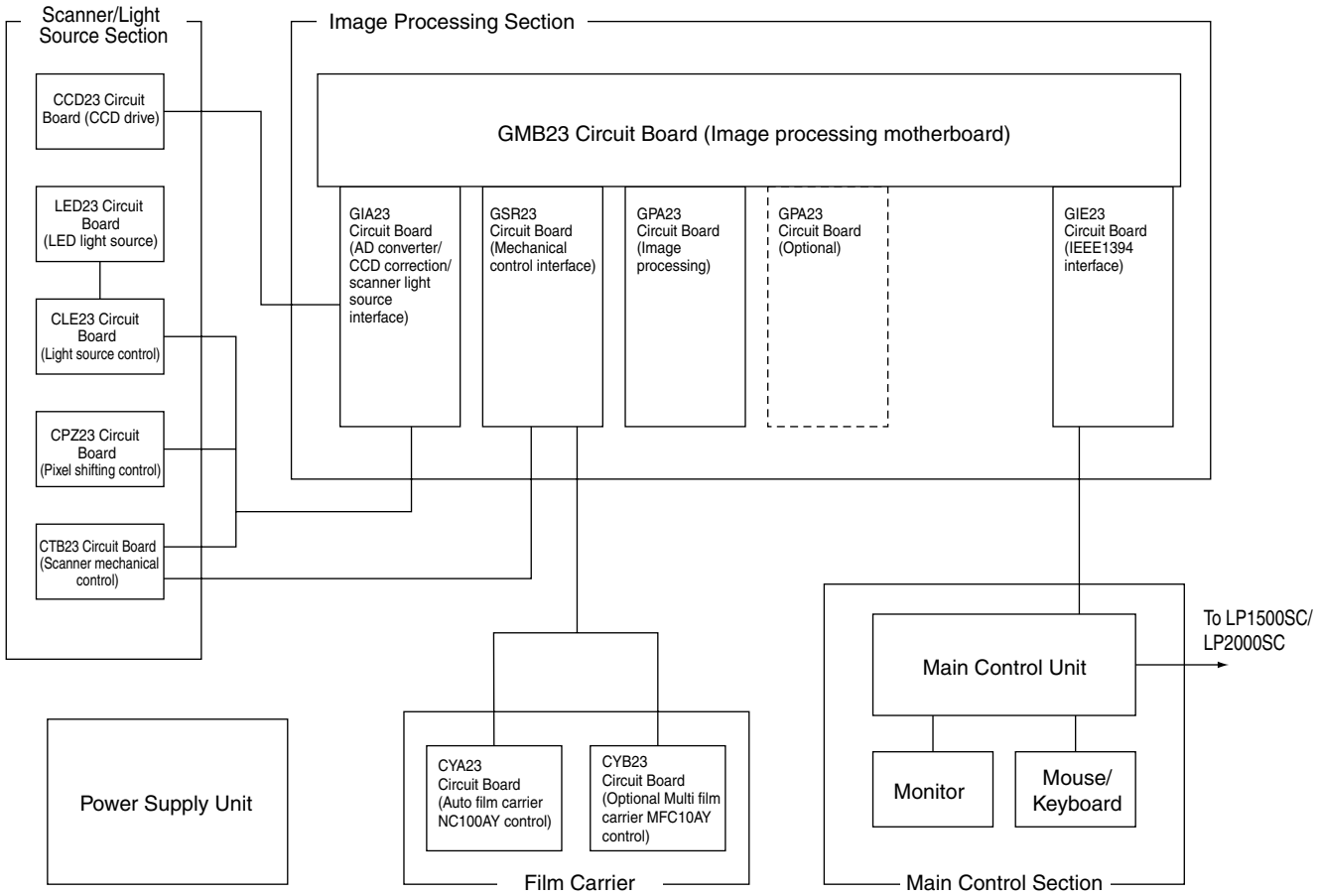
### 3.1.9 Image Processing Block Diagram


Scanner/Light Source Section
CCD23 Circuit Board (CCD drive)
LED23 Circuit Board (LED light source)
CLE23 Circuit Board (Light source control)
CPZ23 Circuit Board (Pixel shifting control)
CTB23 Circuit Board (Scanner mechanical control)
Image Processing Section
GMB23 Circuit Board (Image processing motherboard)
GIA23 Circuit Board (AD converter/ CCD correction/ scanner light source interface)
GSR23 Circuit Board (Mechanical control interface)
GPA23 Circuit Board (Image processing)
GPA23 Circuit Board (Optional)
GIE23 Circuit Board (IEEE1394 interface)
To LP1500SC/ LP2000SC
Main Control Unit
Monitor
Mouse/ Keyboard
Main Control Section
Power Supply Unit
CYA23 Circuit Board (Auto film carrier NC100AY control)
CYB23 Circuit Board (Optional Multi film carrier MFC10AY control)
Film Carrier

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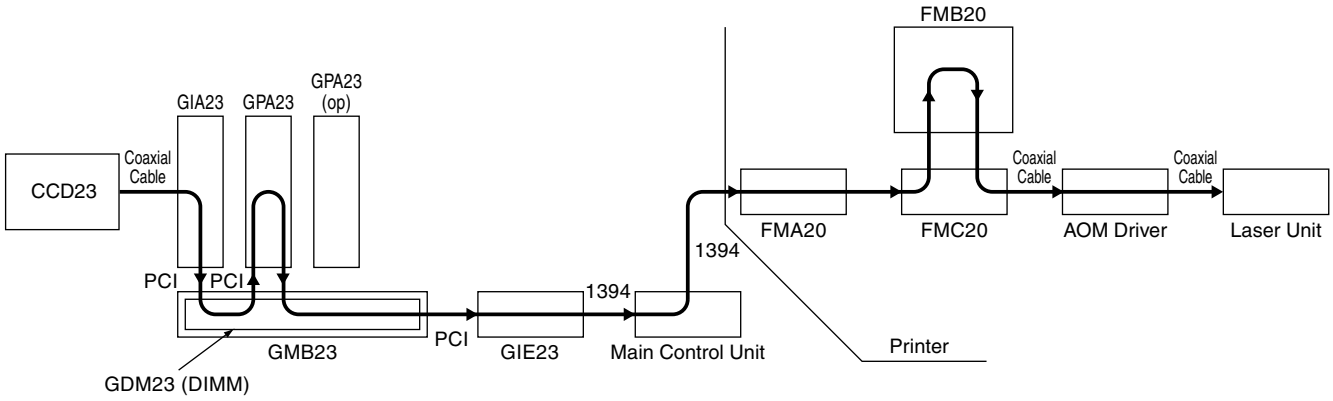
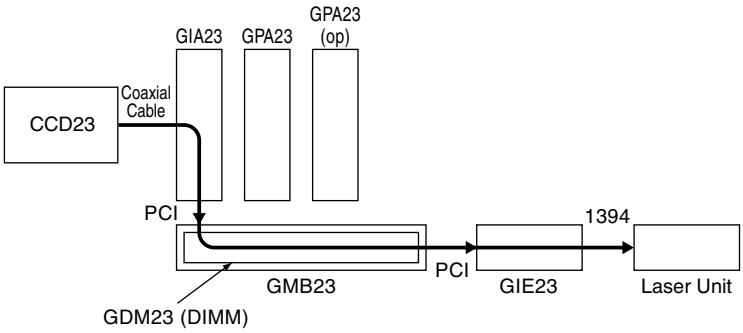
### 3.1.10 Image Data Transfer

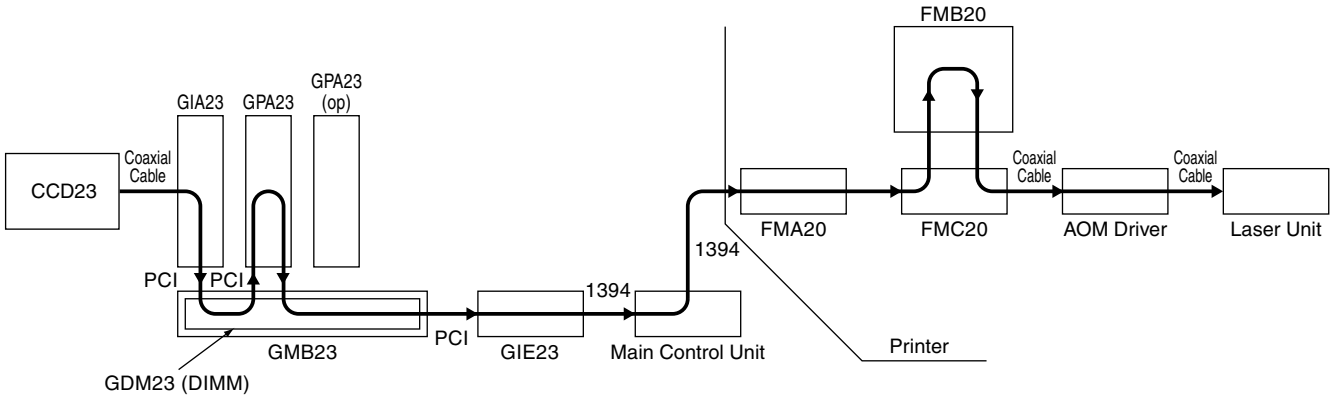
**• One-way Mode**



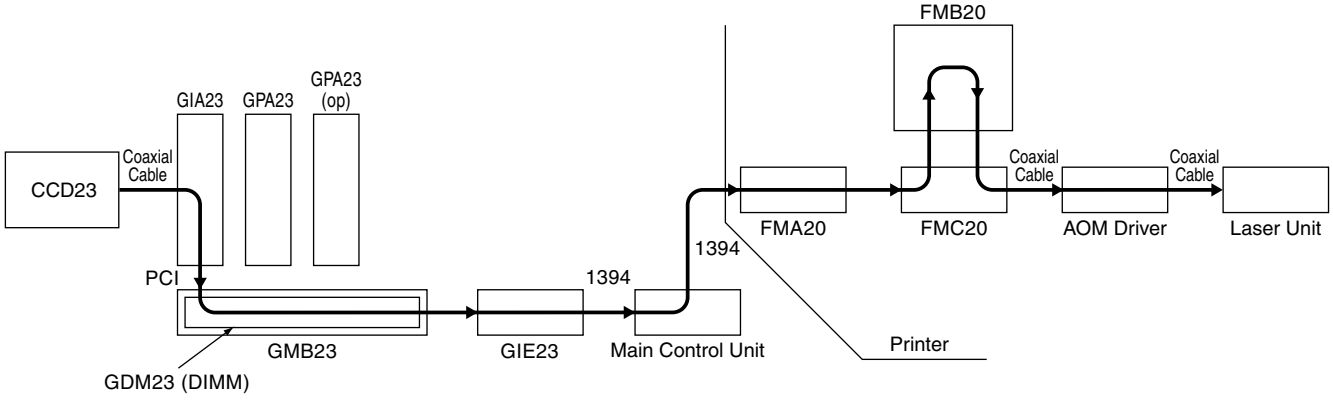

**• Two-way Mode Pre-scanning**




**• Two-way Mode Fine-scanning**




**• Index Printing**



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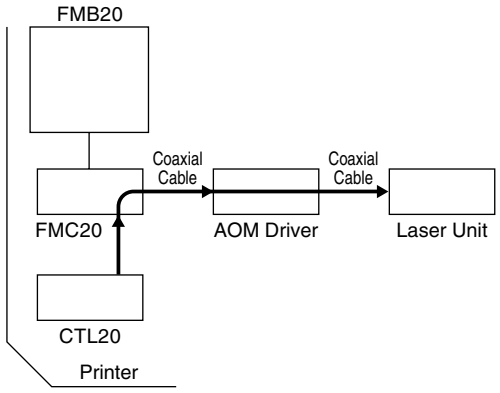
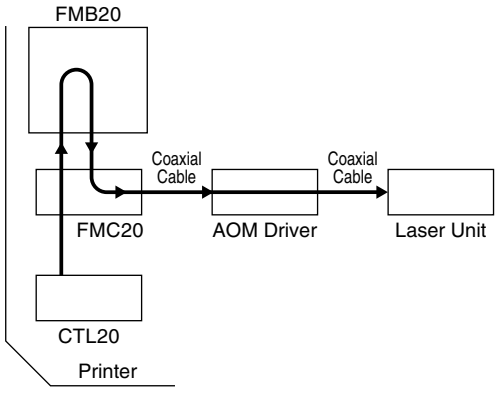
**• Calibration Printing (421 Paper Condition Setup)**



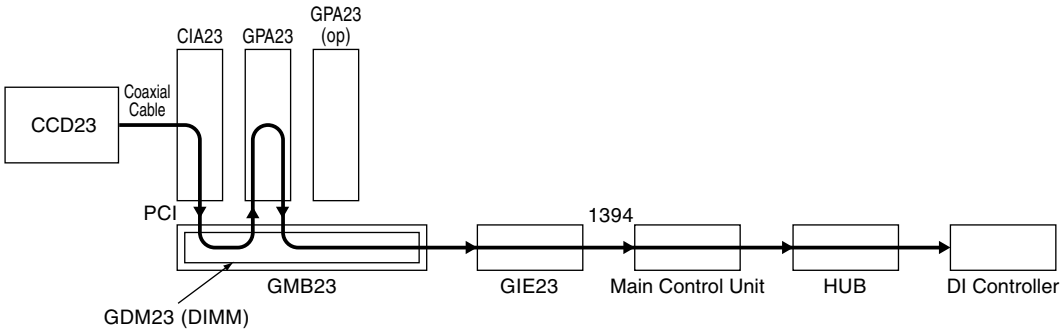

**• Test Pattern Printing (453)**



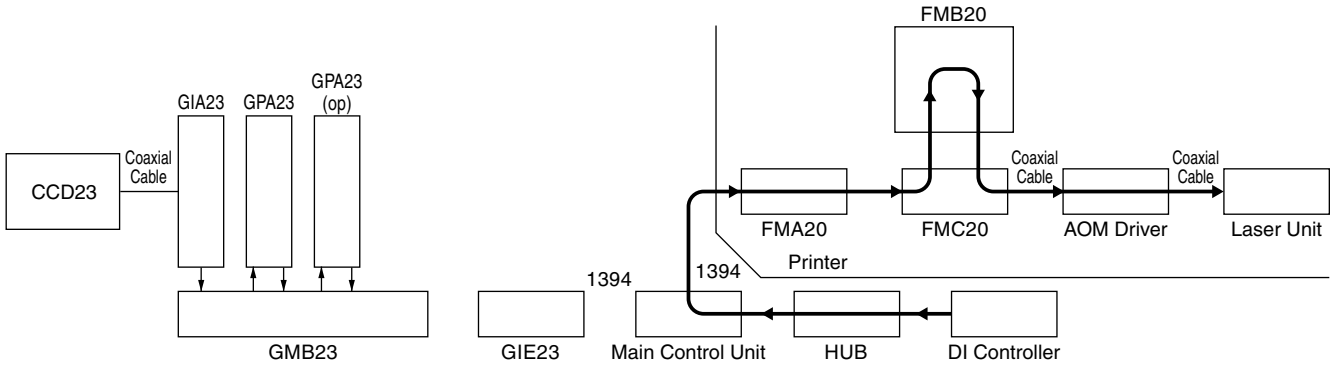

3

3.1.10

**• DI Writing**




**• DI Print**



• **Scanner Backup FD**

| No. | Path | Filename | Item | Related menu |
|---|---|---|---|---|
| 1 | D:¥FujiFilm¥Frontier¥PARAM¥IMGP | EZ171scnsc-*.* | Fixed data for spectral calibration | – |
| 2 | | dxcode.dat | DX code for special film CH | – |
| 3 | | filmch-nega.dat | Negative data for special film CH | [0223 Special Film Channel Setting] |
| 4 | | filmch-rv.dat | Reversal data for special film CH | [0223 Special Film Channel Setting] |
| 5 | | link-dx-filmch.dat | Link data for special film CH | [0223 Special Film Channel Setting] |
| 6 | D:¥FujiFilm¥Frontier¥PARAM¥Ope | Function_Order.csv | Function registration data | – |
| 7 | D:¥FujiFilm¥Frontier¥PARAM¥PDInfo | ProductInfo.dat | Production information data | [0120 Production Information] [0127 Accumulated Production Information] |
| 8 | D:¥FujiFilm¥Frontier¥PARAM¥SCAN | LEN_ID.* | Lens registration data | [0344 Lens Registration] |
| 9 | | MAG_CALIB.* | Optical magnification calibration data | [0346 Optical Magnification Calibration] |
| 10 | | FOC_CALIB.* | Focus calibration data | [0347 Focus Calibration] |
| 11 | | LED_CUR.* | LED light amount adjustment data | [0349 LED Light Amount Adjustment] |
| 12 | | PZR_ADJ.* | Piezoelectric displacement correction fctor data | [0350 Scanner Parameter Check/Delete] |
| 13 | | AD_TIMING.* | AD timing adjustment data | [0351 CCD Adjustment - AD timing adjustment] |
| 14 | | OFD_VOLT.* | OFD voltage adjustment data | [0351 CCD Adjustment - OFD voltage adjustment] |
| 15 | | SK4DPL.* | Gray pixel information data | [0351 CCD Adjustment - Gray pixel detecting] |
| 16 | | SK4LUT.BIN | Density conversion LUT data | Fixed parameter |
| 17 | | FCSADJ_*_*.INI | Focus position adjustment data | [0321 Focus Position Adjustment] |
| 18 | | MSKADJ_*_*.INI | Mask position adjustment data | [0420 Mask Position Adjustment] |
| 19 | | NC100AY-*-*.ini | Scanning condition parameter | Fixed at release |
| 20 | | AFInfo.INI | AF operation setup data | [0323 AF Function Setup] |
| 21 | | RunningInfo.ini | Scanner working information data | [0322 Working Information Display] or Post-operational Check |
| 22 | | IDINFO.* | Scanner ID information data | CTB, CLE, CPZ or CCD circuit board difference at system startup |
| 23 | | SCAN_SRD_AREA.BIN | CCD size data of standard scanning range | Fixed at release |
| 24 | | MNTRT_AFC_*.ini | NC100AY monitor frame ratio data | [0425 NC100AY Monitor Frame Ration Setup] |
| 25 | | MNTRT_MFC_*.ini | MFC10AY monitor frame ratio data | [0426 MFC10AY Monitor Frame Ratio Setup] |
| 26 | | FCSOFS_AFC_*.ini | NC100AY focus offset data | [0441 NC100AY Focus Offset Adjustment] |
| 27 | | FCSOFS_MFC_*.ini | MFC10AY focus offset data | [0442 MFC10AY Focus Offset Adjustment] |
| 28 | | (Registry) | NC100AY fixed feeding data | [0400 NC100AY Fixed Feeding Setup] |
| 29 | D:¥FujiFilm¥Frontier¥LOG | EzScnscNg.log | Spectral calibration log | [0348 Spectral Calibration] |
| 30 | | EzScnscRv.log | Spectral calibration log | [0348 Spectral Calibration] |
| 31 | D:¥FUJIFILM¥STGLAYER¥Config¥ImgSys¥Profile¥Profiles¥Input¥Nega | NegaInput.* | Spectral calibration data | [0348 Spectral Calibration] |
| 32 | D:¥FUJIFILM¥STGLAYER¥Config¥ImgSys¥Profile¥Profiles¥Input¥Rev | RevInput.* | | [0348 Spectral Calibration] |
| 33 | D:¥FUJIFILM¥STGLAYER¥Config¥ImgSys¥Profile¥Profiles¥Input¥Bw | BwInput.* | | [0348 Spectral Calibration] |





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• **Printer Backup FD**

| No. | Item | Path | Filename | Related menu |
|---|---|---|---|---|
| 1 | Operation panel Japanese/English display | D:\FUJIFILM\FRONTIER\PARAM\PRIN | OPPARA.TXT | Operation Panel Menu [LANGUAGE] [SYSTEM] |
| 2 | Printer mechanism fine adjustment | D:\FUJIFILM\FRONTIER\PARAM\PRIN | MCPARA.TXT | [0221 Paper Magazine Registration]<br>[0520 Paper Feed Length Adjustment]<br>[0551 Printer Mechanism Fine Adjustment]<br>[0526 Precut Length Setting] |
| 3 | Image position fine adjustment parameter | D:\FUJIFILM\FRONTIER\PARAM\PRIN | MCADJ.TXT | [0527 Image Position Fine Adjustment] |
| 4 | Exposure parameter | D:\FUJIFILM\FRONTIER\PARAM\PRIN | LDPARA.TXT | [0242 Paper Condition Method Setup]<br>[0221 Paper Magazine Registration]<br>[0546 Scanning Position/Scanning Home Position Parameter Setup]<br>[0547 Main Scanning Position Adjustment/Laser Beam Sync. Rough Adjustment]<br>[0548 Laser Beam Sync. Fine Adjustment Print]<br>*1 |
| 5 | Processor setting parameter | D:\FUJIFILM\FRONTIER\PARAM\PRIN | PRPARA.TXT | [0221 Paper Magazine Registration]<br>[0640 Pump Output Measurement/Setting]<br>[0641 Auto Cleaning Output Measurement/Setting]<br>[0620 Processing Temperature Setting]<br>[0621 Replenisher Rate Setting]<br>[0626 Evaporation Correction Rate Setting]<br>[0622 Low Volume Setup]<br>[0242 Processor Temperature Calibration]<br>[0550 Processor Operating Condition Setup] |
| 6 | Calibration result | D:\FUJIFILM\FRONTIER\PARAM\PRIN | PRLUT**.TXT | [0623 Paper Condition Method Setup]<br>[0625 Paper Condition Setup Table (LUT) Copy]<br>Density measurement automatically updated upon execution of Density Measurement *2 |
| 7 | Printer operation information | D:\FUJIFILM\FRONTIER\PARAM\PRIN | SSRUNIFO.TXT | [0140 Installation Information Setup] |
| 8 | Printer operation information (transport system) | D:\FUJIFILM\FRONTIER\PARAM\PRIN | MCRUNIFO.TXT | Automatically updated |
| 9 | Laser deterioration record | D:\FUJIFILM\FRONTIER\PARAM\PRIN | LDIM.TXT | Automatically updated |
| 10 | Mode stabilization log | D:\FUJIFILM\FRONTIER\PARAM\PRIN | LDSHG.TXT | [0522 G, B Laser (SHG) Optimal Temperature Setup] |
| 11 | Processor operation information | D:\FUJIFILM\FRONTIER\PARAM\PRIN | PRRUNIFO.TXT | Automatically updated |
| 12 | Printer information | D:\FUJIFILM\FRONTIER\PARAM\PRIN | SSOTHIFO.TXT | Automatically updated [0121 Timer Setup] |
| 13 | Printer function setup | D:\FUJIFILM\FRONTIER\PARAM\PRIN | MCSETUP.TXT | [0528 Printer Function Select] |
| 14 | Processor information | D:\FUJIFILM\FRONTIER\PARAM\PRIN | PRSETUP.TXT | Operation Panel Menu [SYSTEM] [PROC.INST.MODE] |

* Timing in which the SRAM information in the printer is updated.
* The data file saved in the scanner is updated at the time of execution of Post-operation Check, Data Backup, or Data Saving.

*1: Even for [0543], [0544], and [0545], the contents may vary because of the presence of a copy of ROS EEPROM. No data will be read when only the beginning is provided.
*2: When “The ambient variable connection, the master magazine registration” is set for YES, calibration is executed at the start of transport or at the time of installation of the magazine.

[0543] R Laser (R-LD) Data
[0544] G Laser (G-SHG) Data
[0545] B Laser (B-SHG) Data

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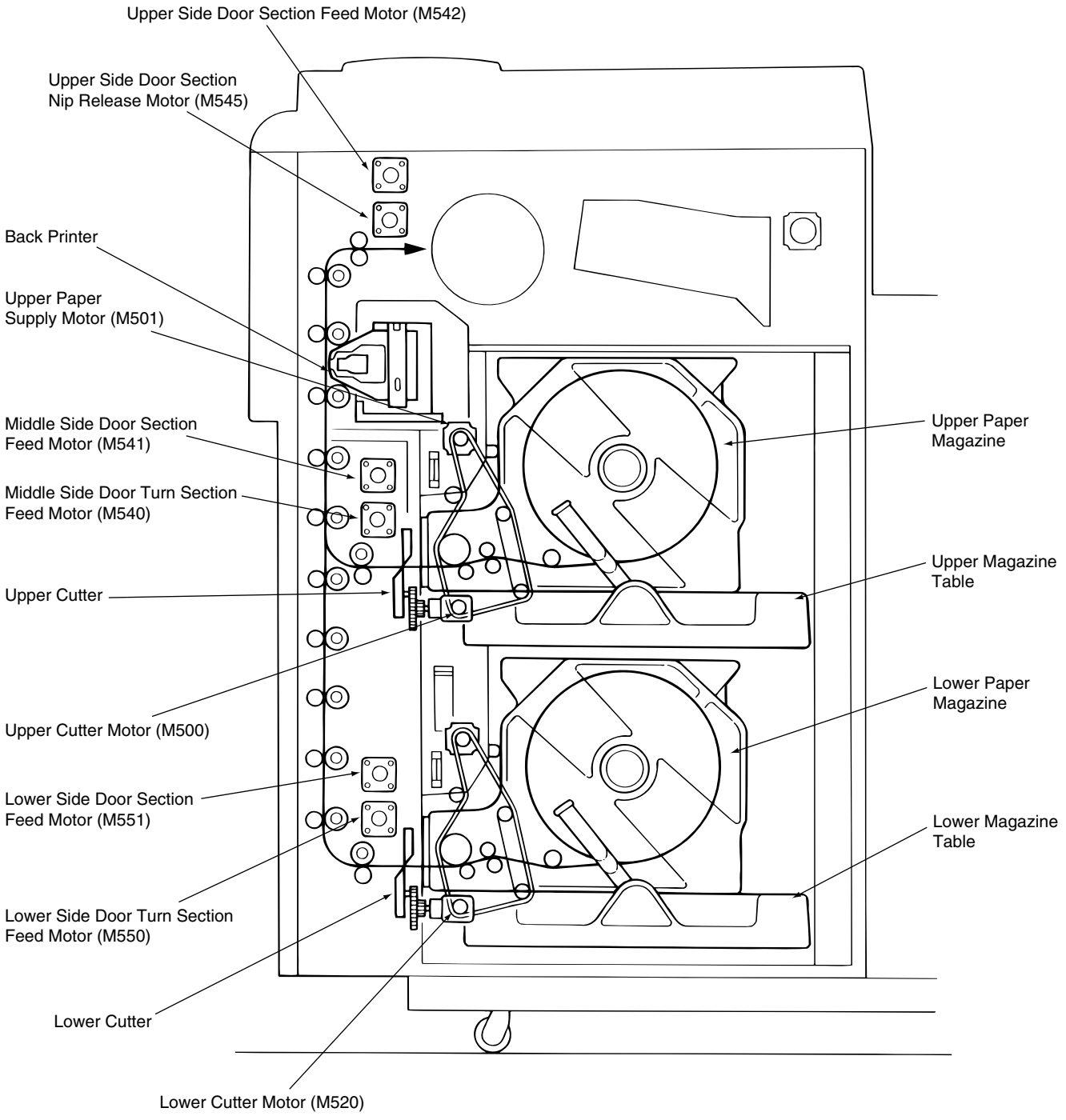
# 3.2 Printer Section (LP1500SC/LP2000SC)

### 3.2.1 Paper Supply Section Configuration


Upper Side Door Section Feed Motor (M542)
Upper Side Door Section Nip Release Motor (M545)
Back Printer
Upper Paper Supply Motor (M501)
Middle Side Door Section Feed Motor (M541)
Middle Side Door Turn Section Feed Motor (M540)
Upper Cutter
Upper Cutter Motor (M500)
Lower Side Door Section Feed Motor (M551)
Lower Side Door Turn Section Feed Motor (M550)
Lower Cutter
Lower Cutter Motor (M520)
Upper Paper Magazine
Upper Magazine Table
Lower Paper Magazine
Lower Magazine Table

EZ189

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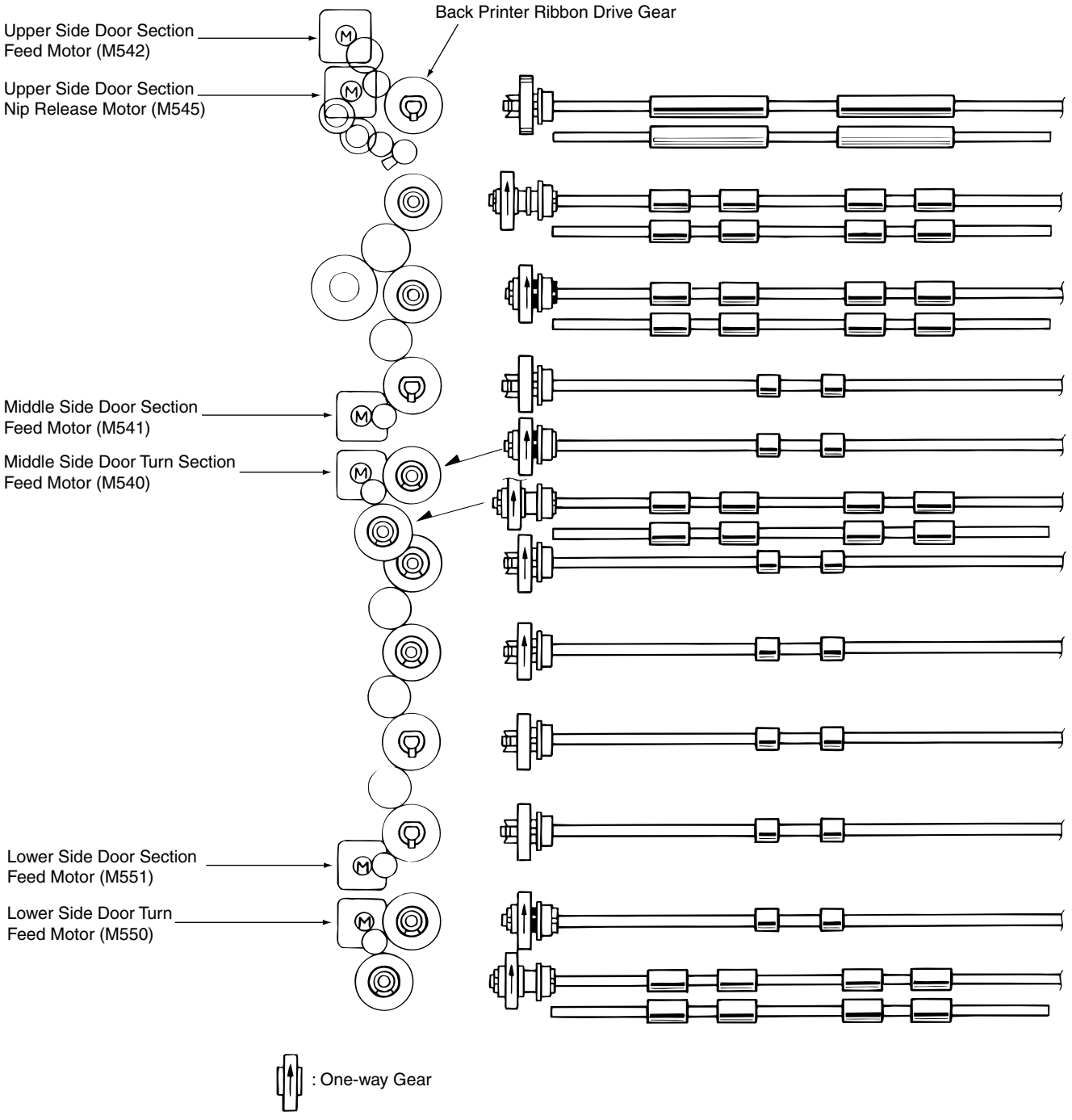
### 3.2.2 Paper Supply Section Feed Roller Configuration


Back Printer Ribbon Drive Gear
Upper Side Door Section Feed Motor (M542)
Upper Side Door Section Nip Release Motor (M545)
Middle Side Door Section Feed Motor (M541)
Middle Side Door Turn Section Feed Motor (M540)
Lower Side Door Section Feed Motor (M551)
Lower Side Door Turn Feed Motor (M550)
: One-way Gear

EZ1040

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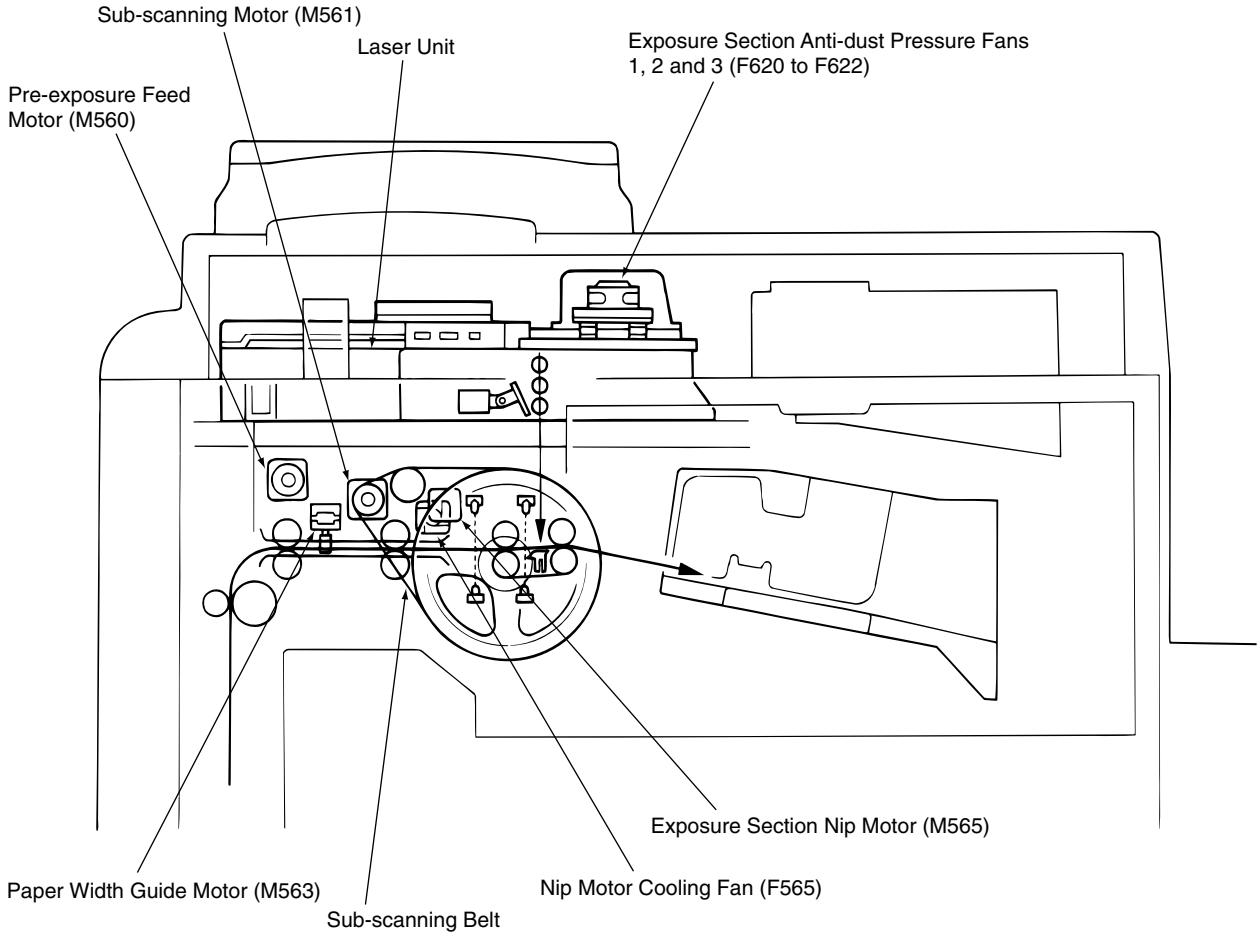
### 3.2.3 Exposure Section Configuration


Sub-scanning Motor (M561)
Laser Unit
Exposure Section Anti-dust Pressure Fans 1, 2 and 3 (F620 to F622)
Pre-exposure Feed Motor (M560)
Exposure Section Nip Motor (M565)
Paper Width Guide Motor (M563)
Nip Motor Cooling Fan (F565)
Sub-scanning Belt

EZ190

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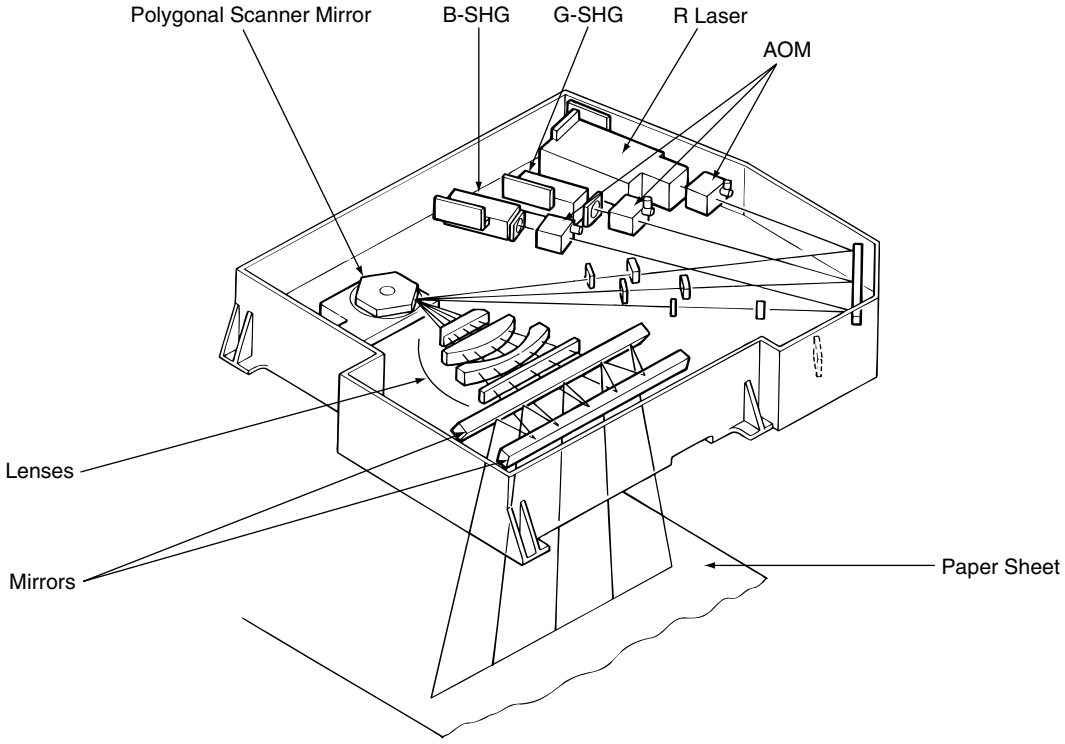
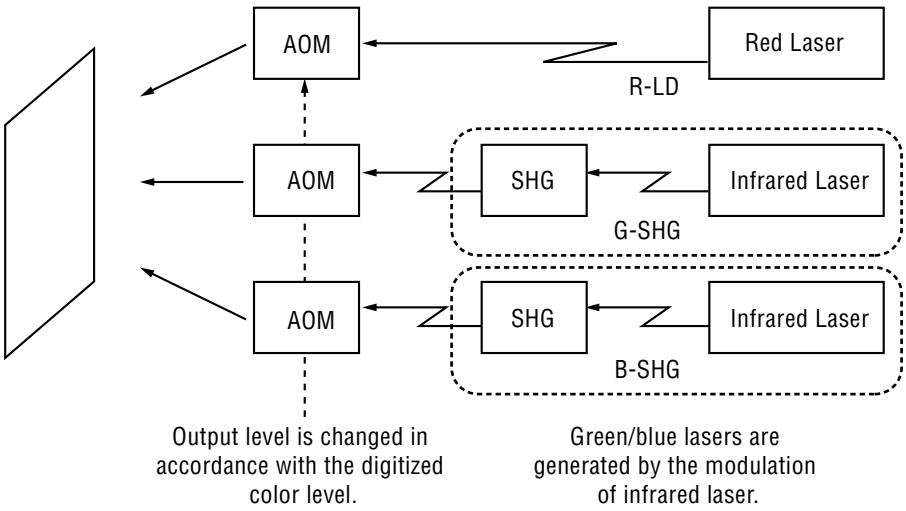
### 3.2.4 Laser Unit Configuration

Laser beams pass through the polygon scanner mirror, lens and mirror, and reach the paper. The polygonal scanner mirror rotates at a constant speed, and always turns the reflecting light in the main scanning direction. The sub-scanning motor (M561) feeds the paper at a speed of 80mm/s (equivalent to 600dpi).






EZ1170




Red laser (Semiconductor laser): Laser diode is used as light source. Blue/green lasers are generated based on the infrared laser.

SHG (Second Harmonic Generator): Blue/green lasers are generated based on the infrared laser.

AOM (Acousto-Optic Modulator): Each laser has one AOM. The laser's output level is changed in accordance with the digitalized color level of the image.

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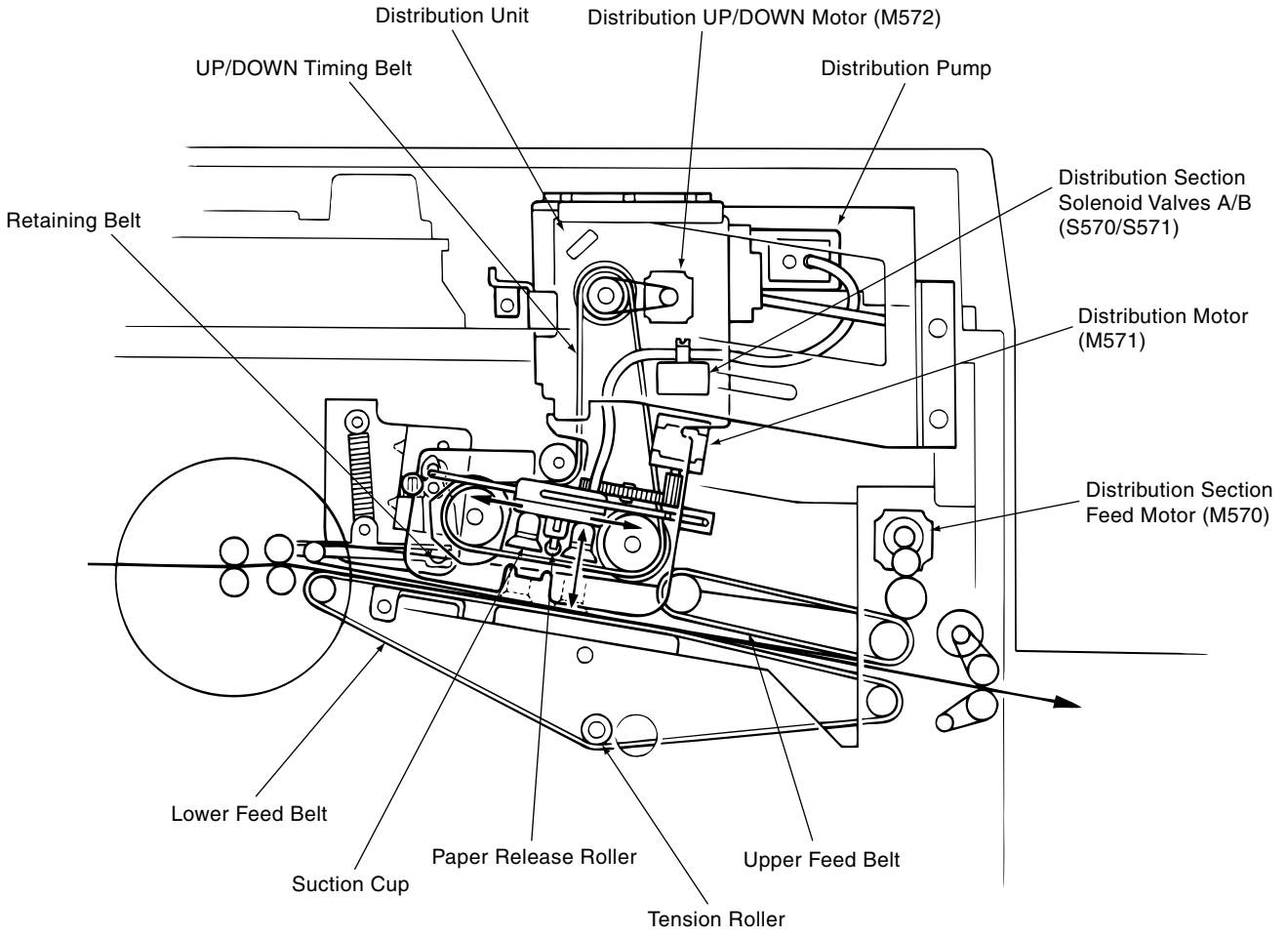
### 3.2.5 Distribution Section




EZ191

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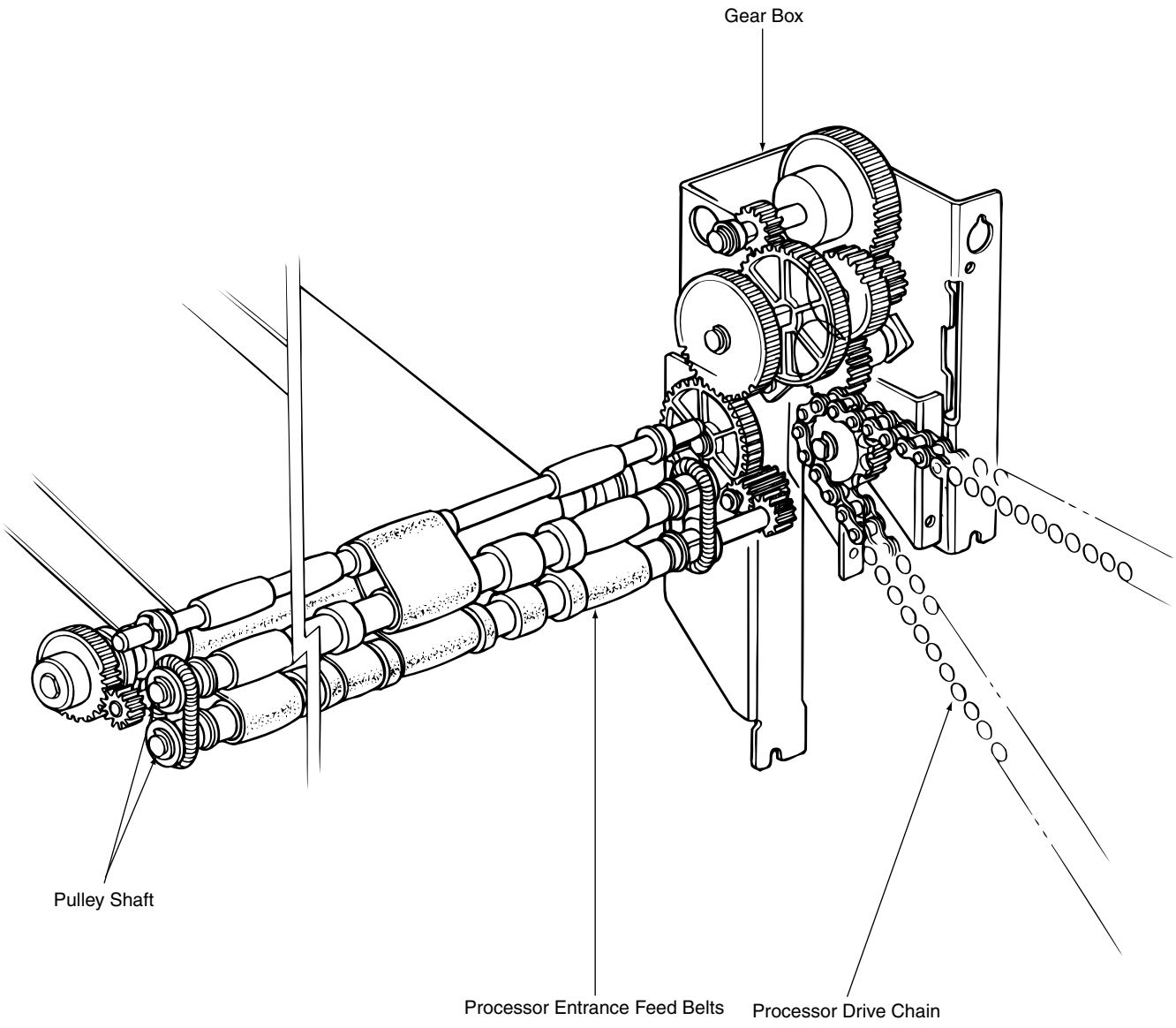
### 3.2.6 Processor Entrance Unit



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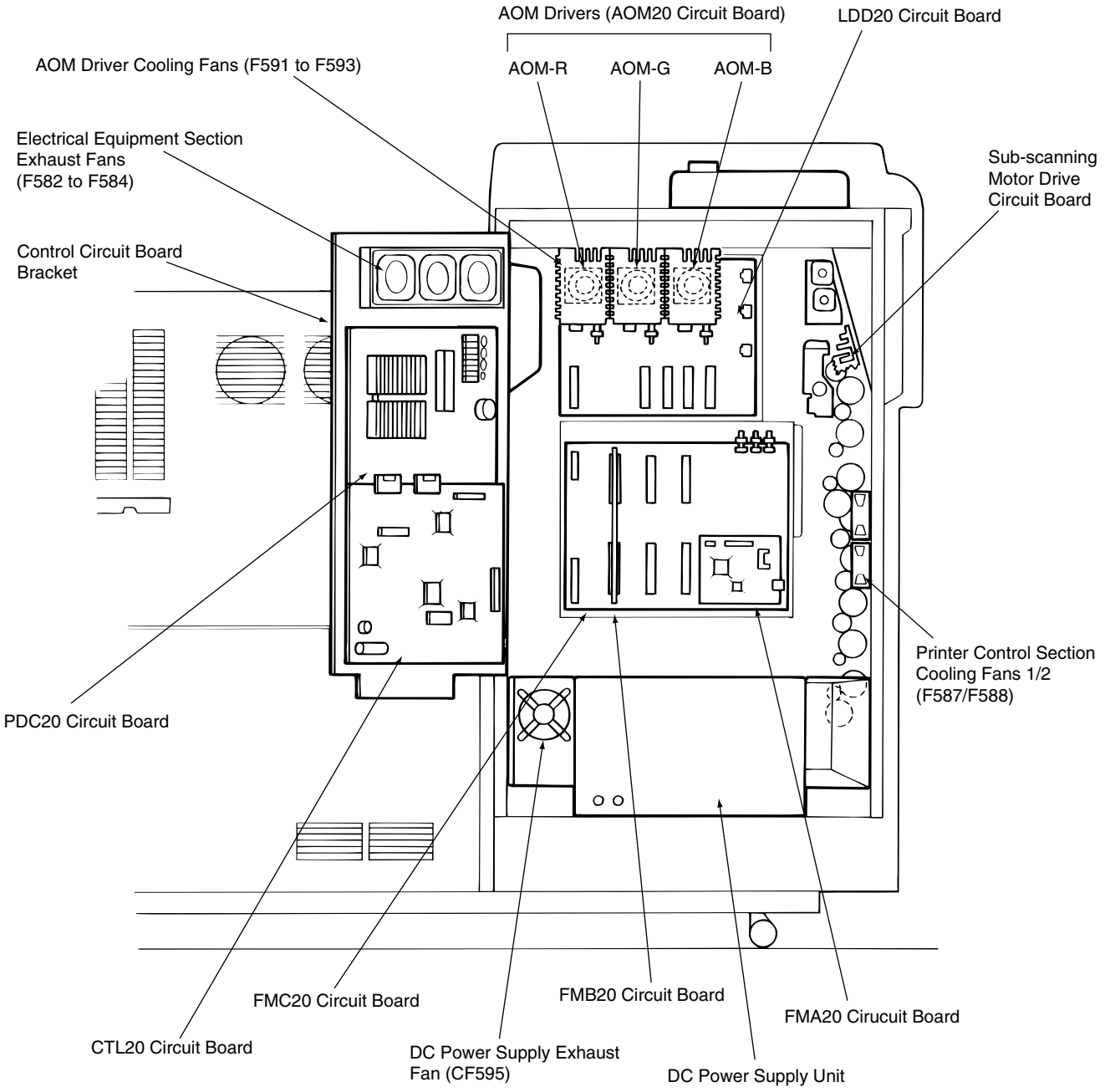
### 3.2.7 Printer Electrical Equipment Section Configurations




EZ1035

### 3.2.8 Circuit Board Main Functions

| Circuit Board | Functions |
|---|---|
| CTL20 | Printer main control circuit board |
| FMA20 | Circuit board interfacing to scanner (receives inputted image data) |
| FMB20 | Frame memory circuit board (stores inputted image data) |
| FMC20 | Frame memory control circuit board (performs tone-processing on inputted image data, and outputs to a correct position) |
| PDC20 | Printer load (motor, solenoid, fan) drive circuit board |
| LDD20 | Laser drive circuit board |
| AOM20 | AOM drive circuit board |

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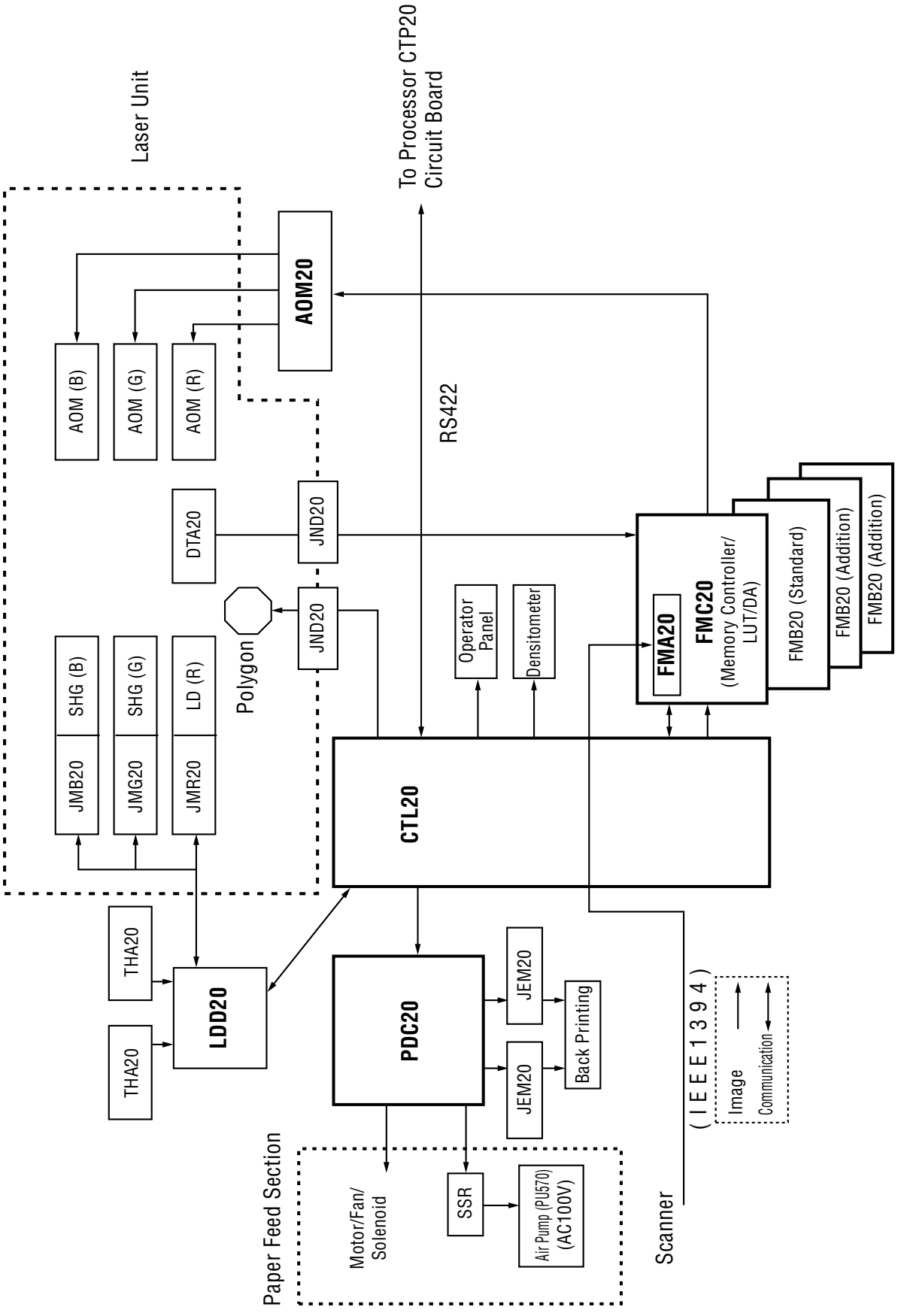
### 3.2.9 Printer Electrical Equipment Block Diagram



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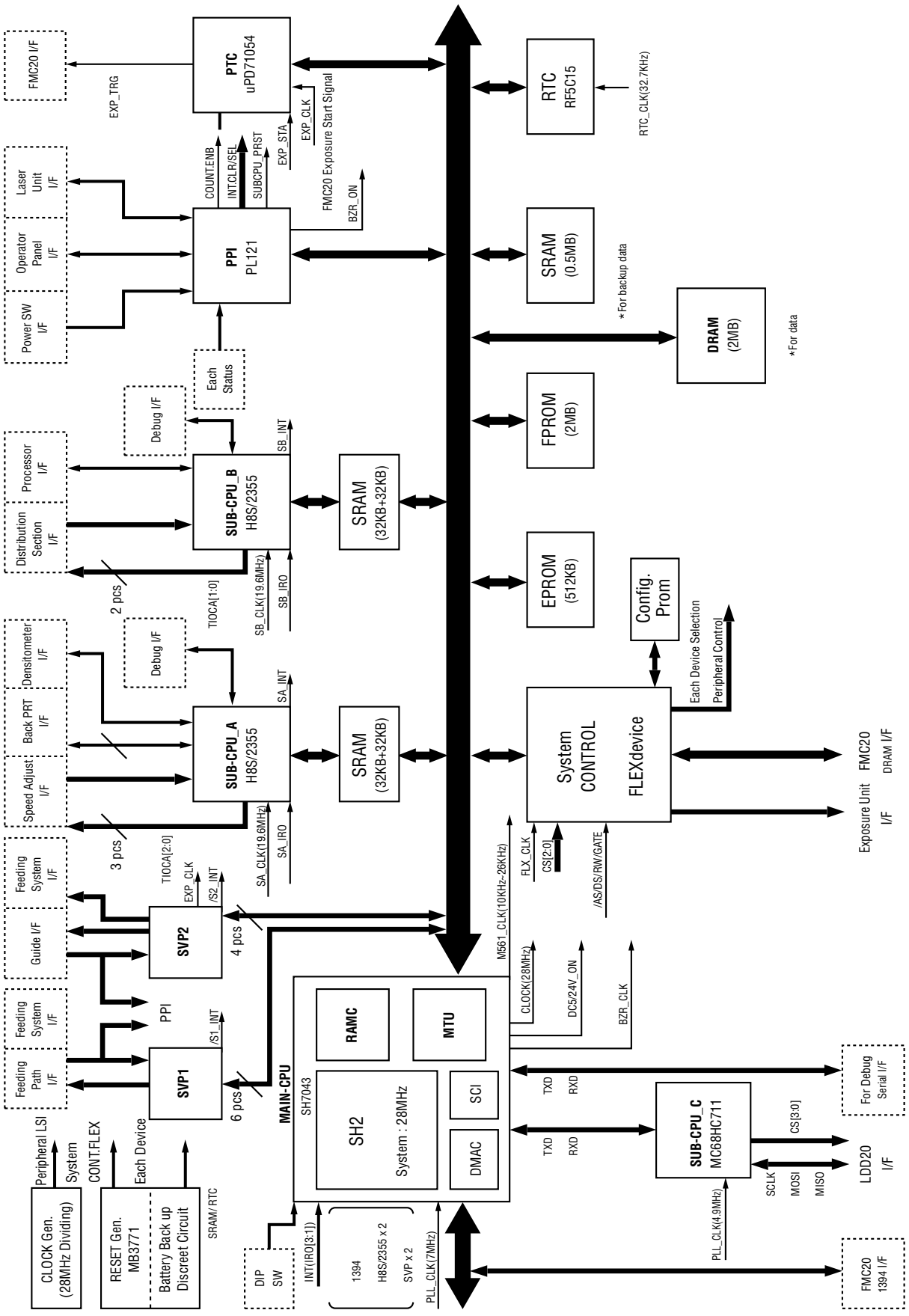
### 3.2.10 CTL20 Circuit Board Block Diagram



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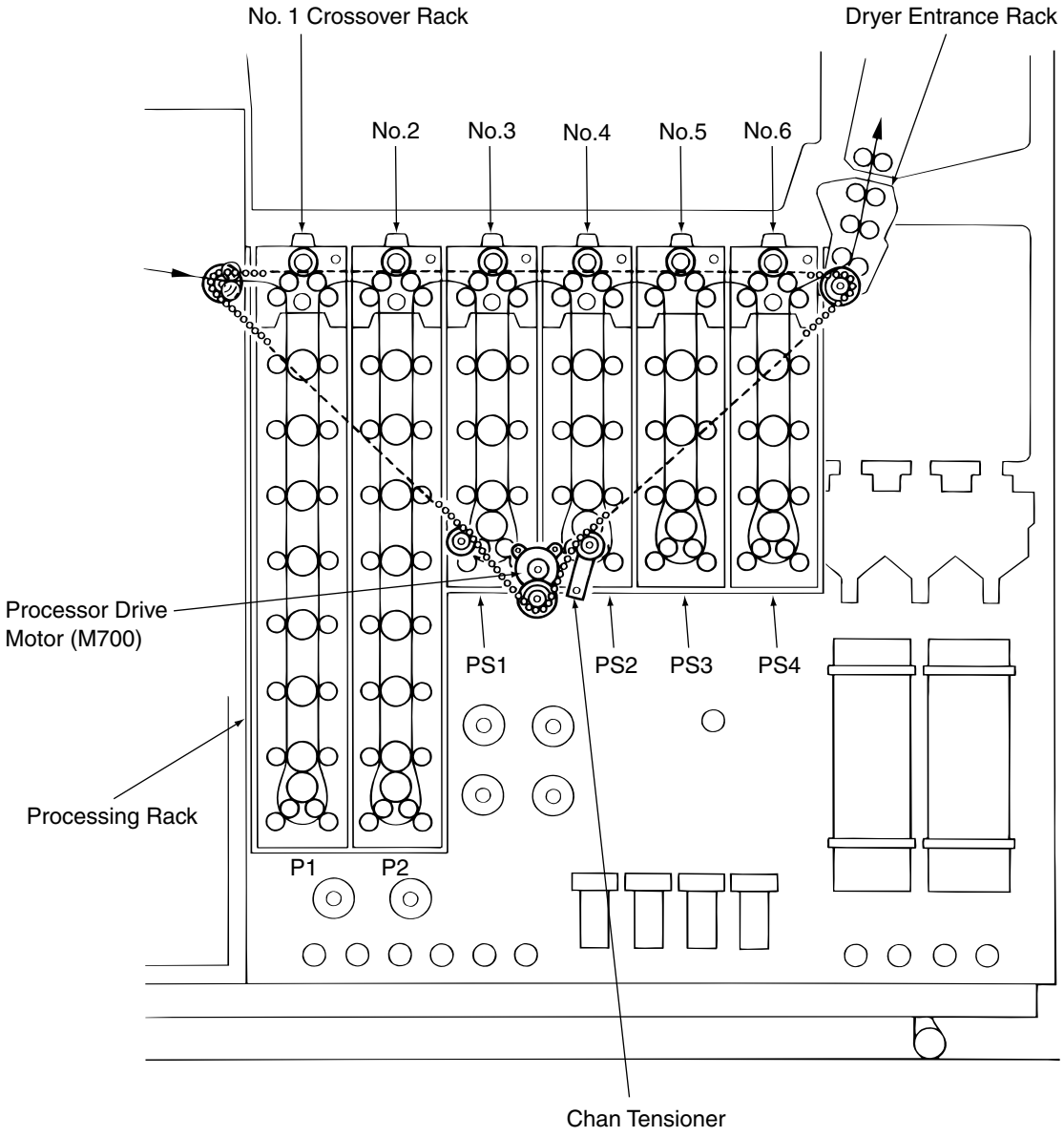
# 3.3 Processor Section (LP1500SC/LP2000SC)

### 3.3.1 Processing Section Configuration




EZ1468

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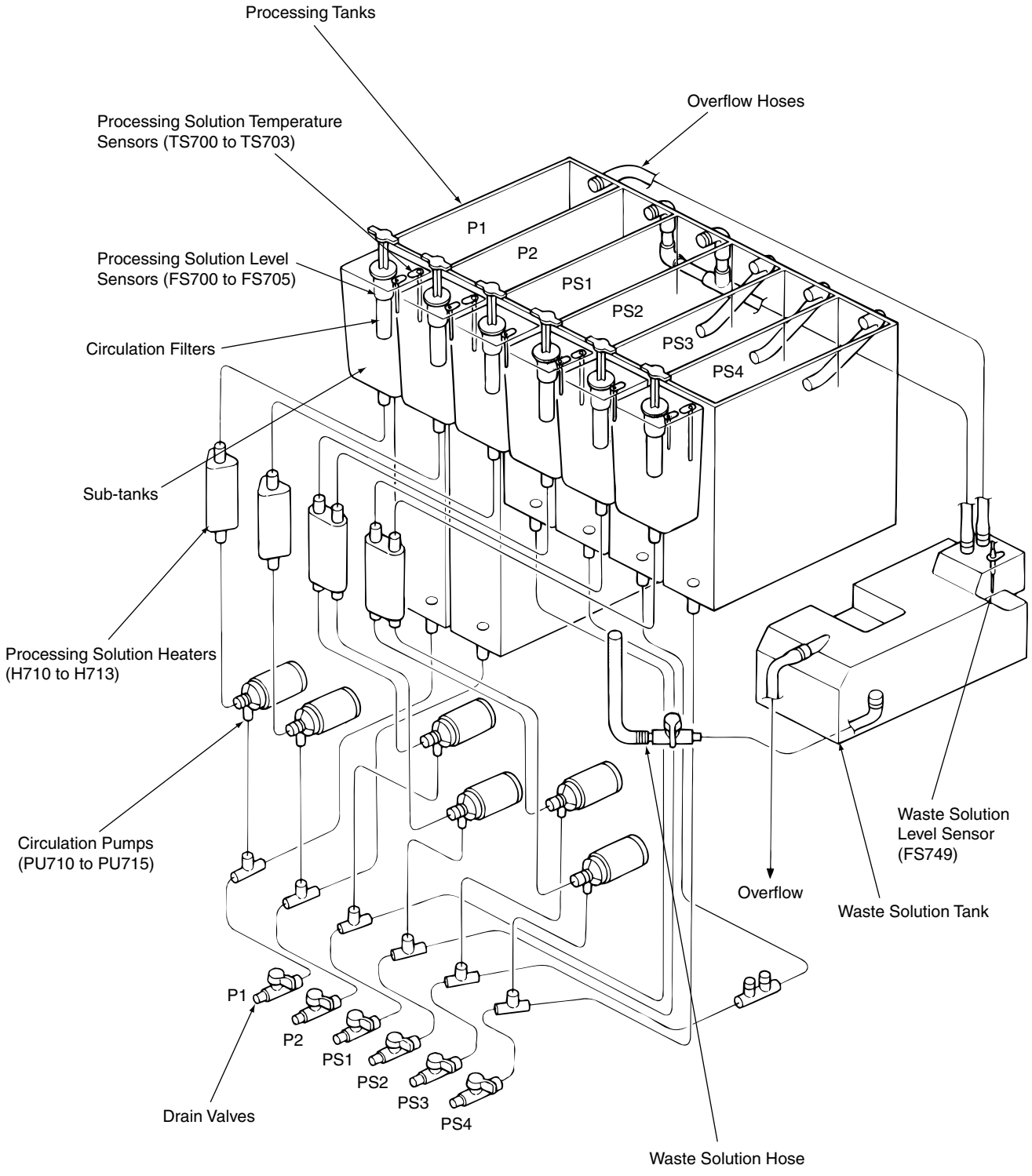
### 3.3.2 Piping Diagram for Solution Circulation System

**LP1500SC**




EZ241

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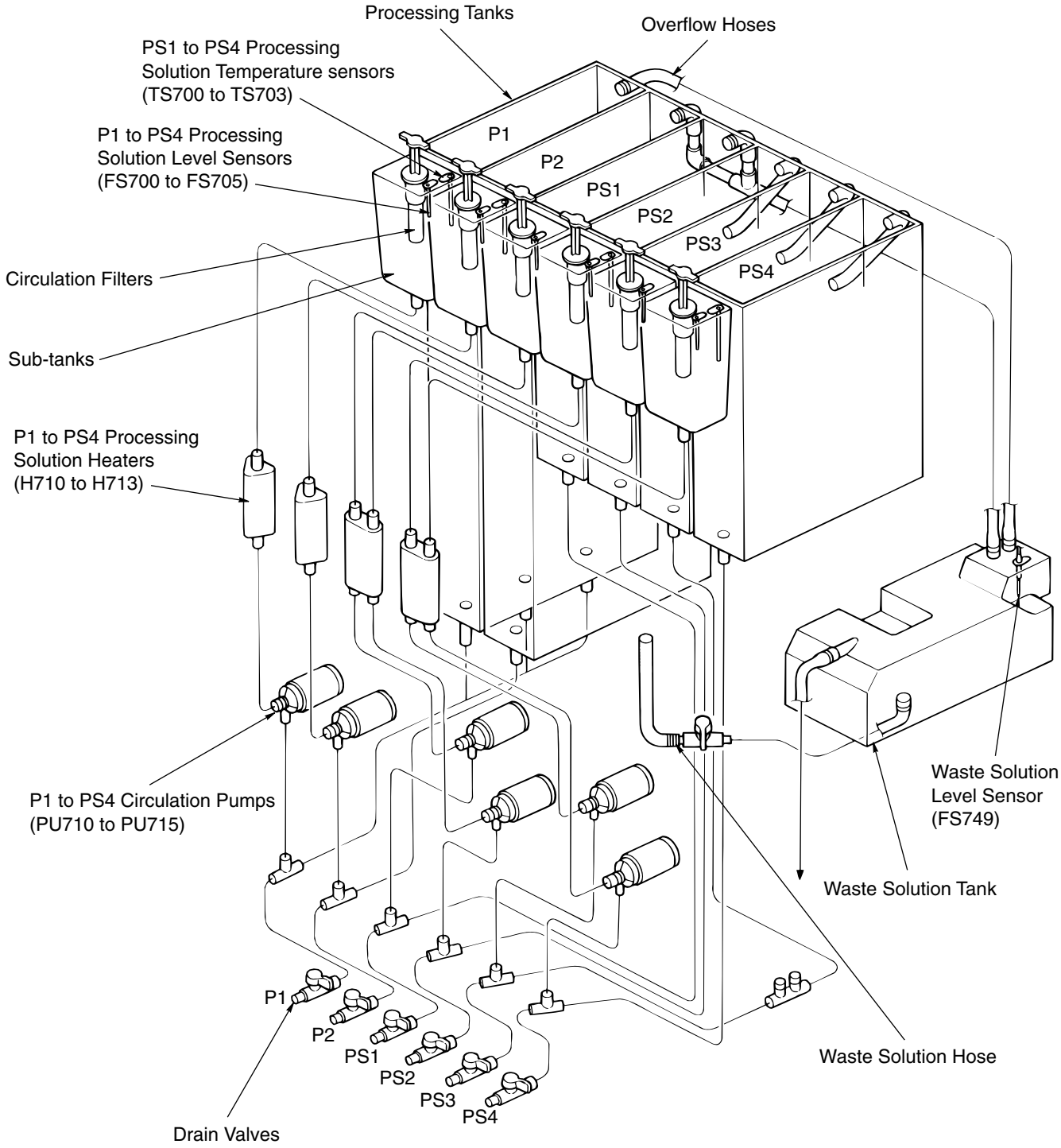
**LP2000SC**




EZ1465

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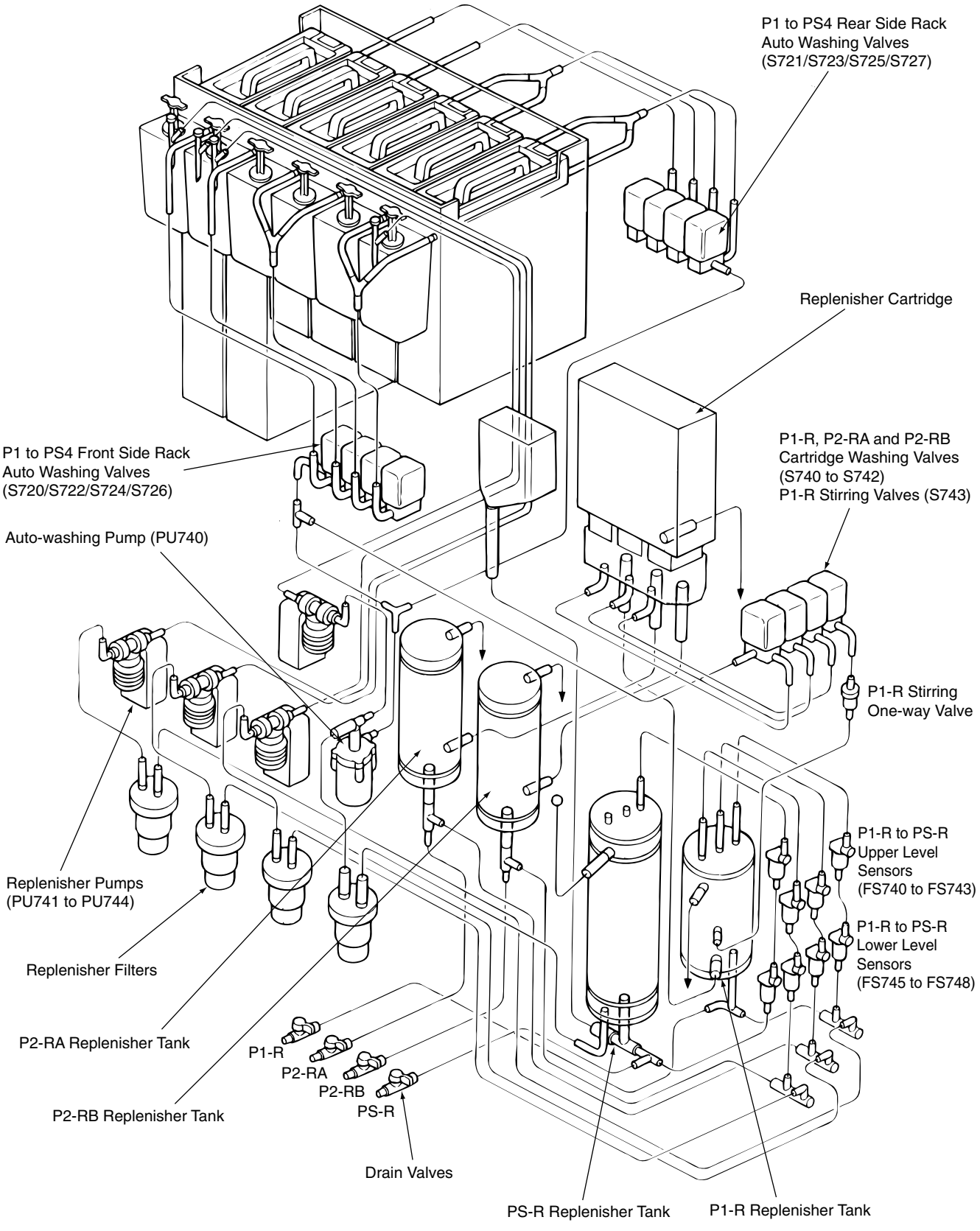
### 3.3.3 Replenishment/Auto-washing Piping System




EZ327

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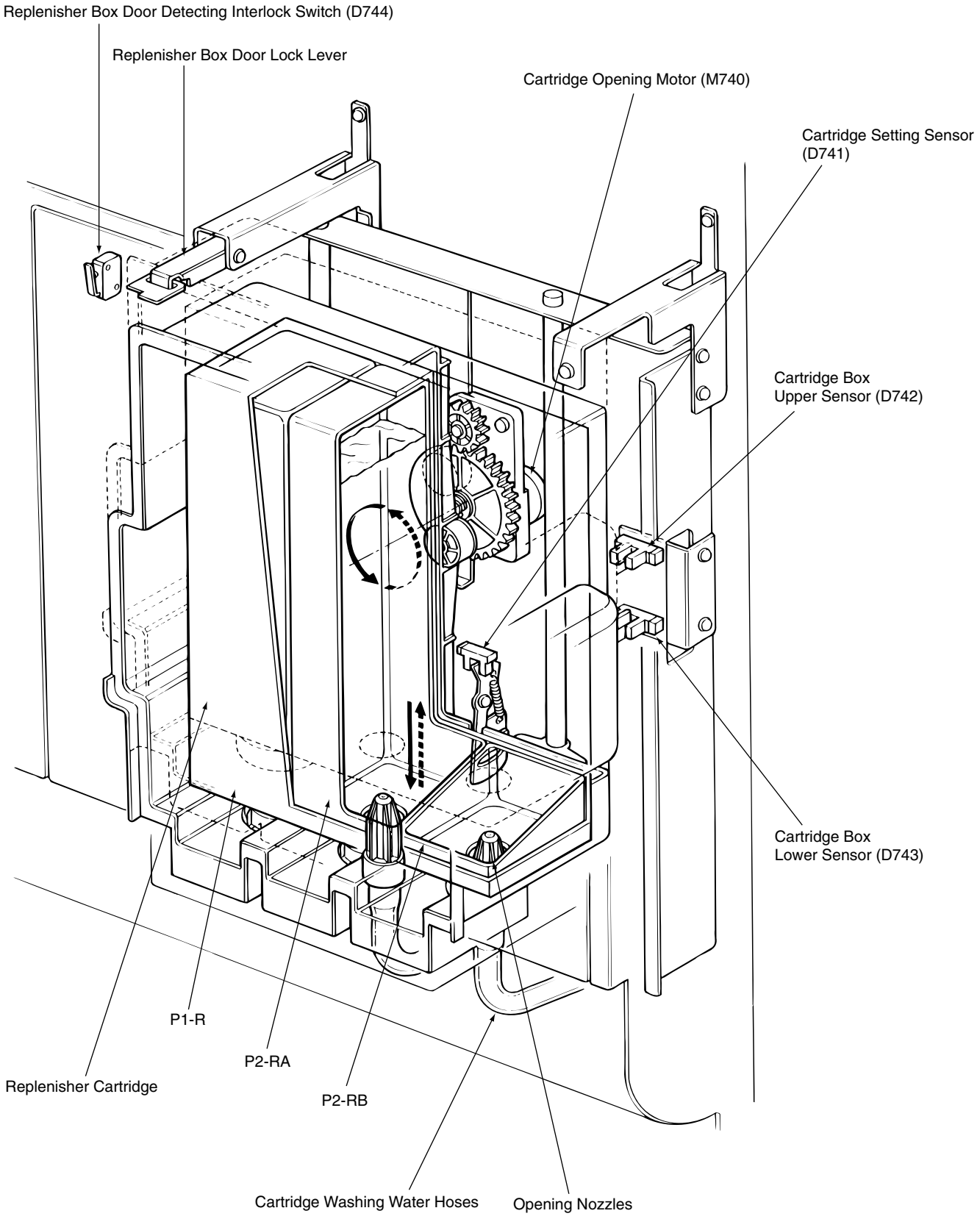
### 3.3.4 Replenisher Cartridge Opening Mechanism




EZ1173

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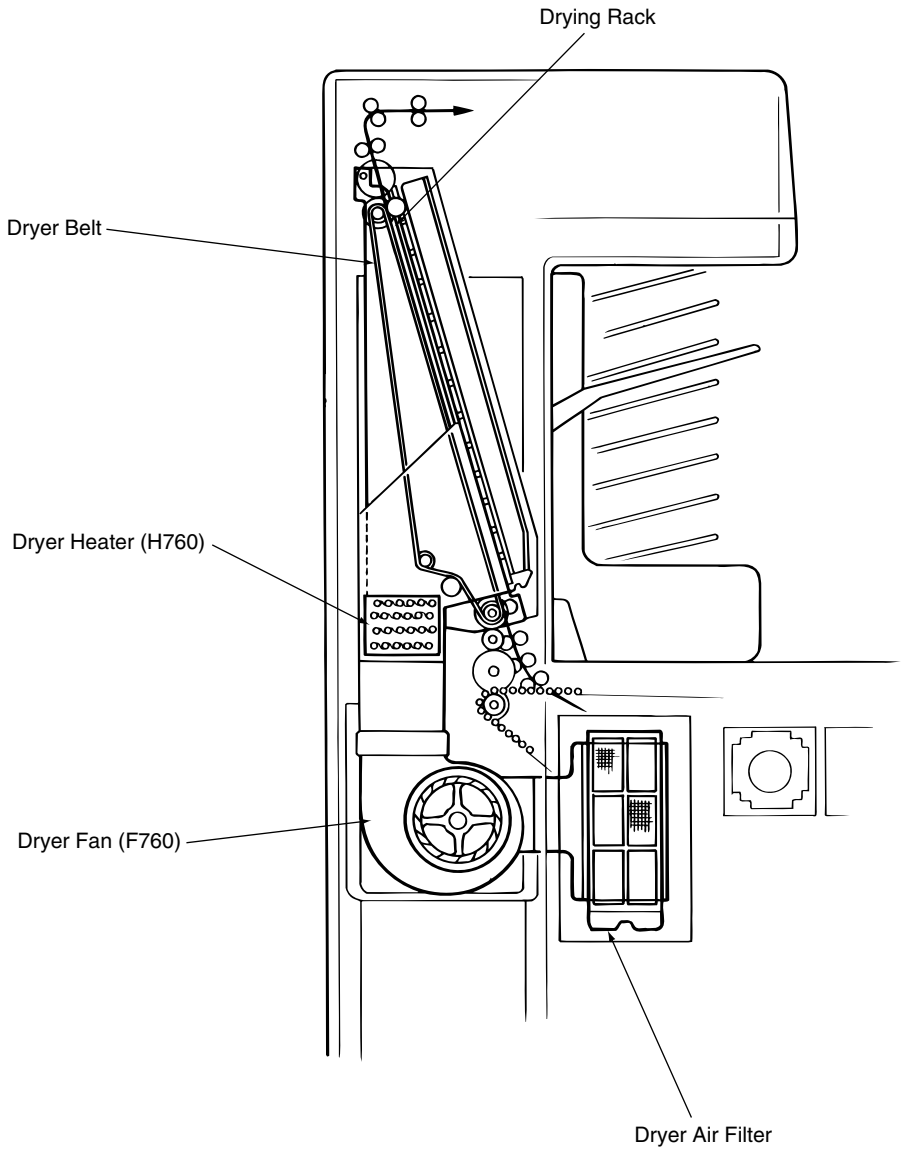
### 3.3.5 Dryer Section Configuration




EZ1038

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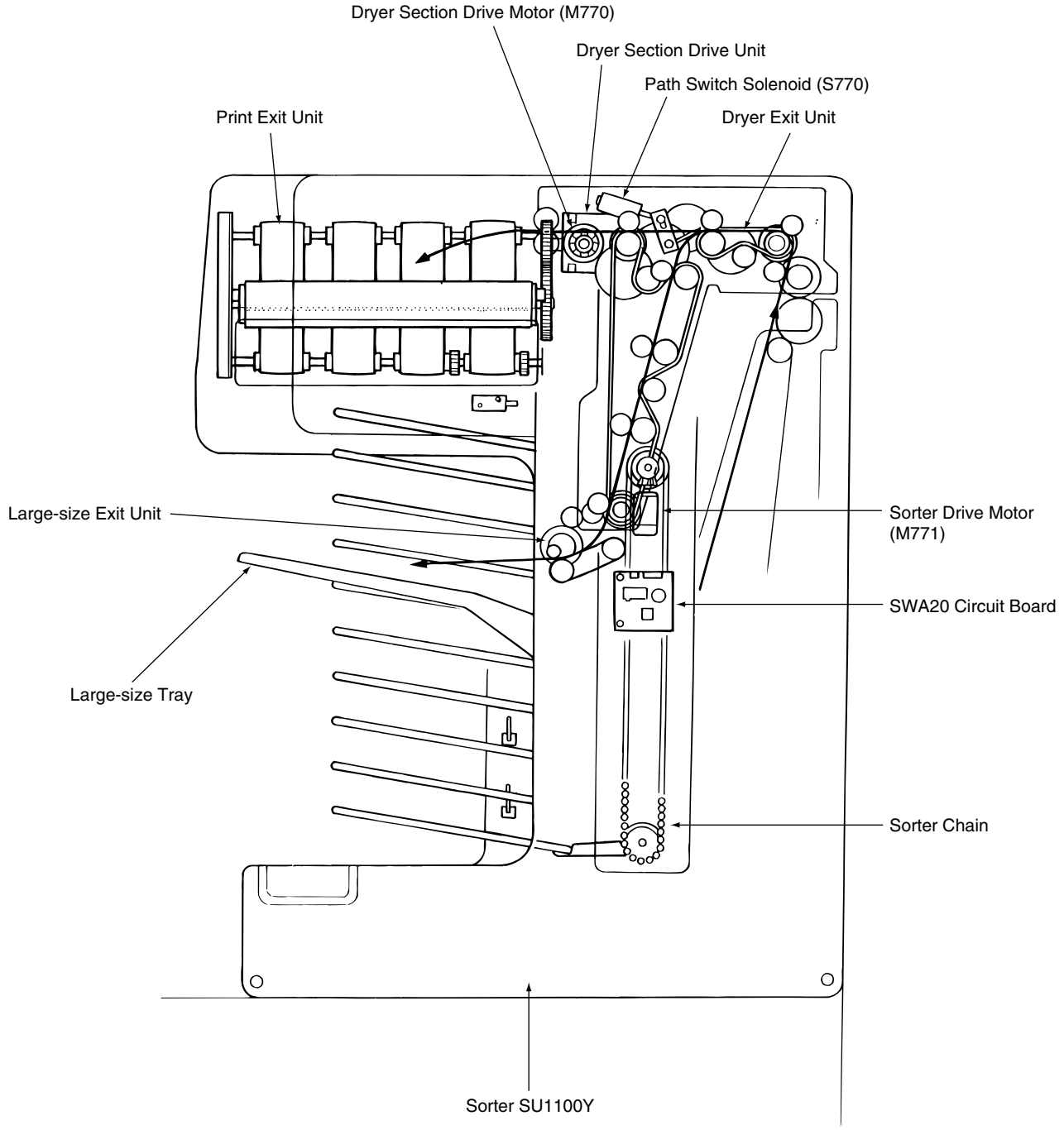
### 3.3.6 Print Feeding Section/Sorter Configurations




EZ1039

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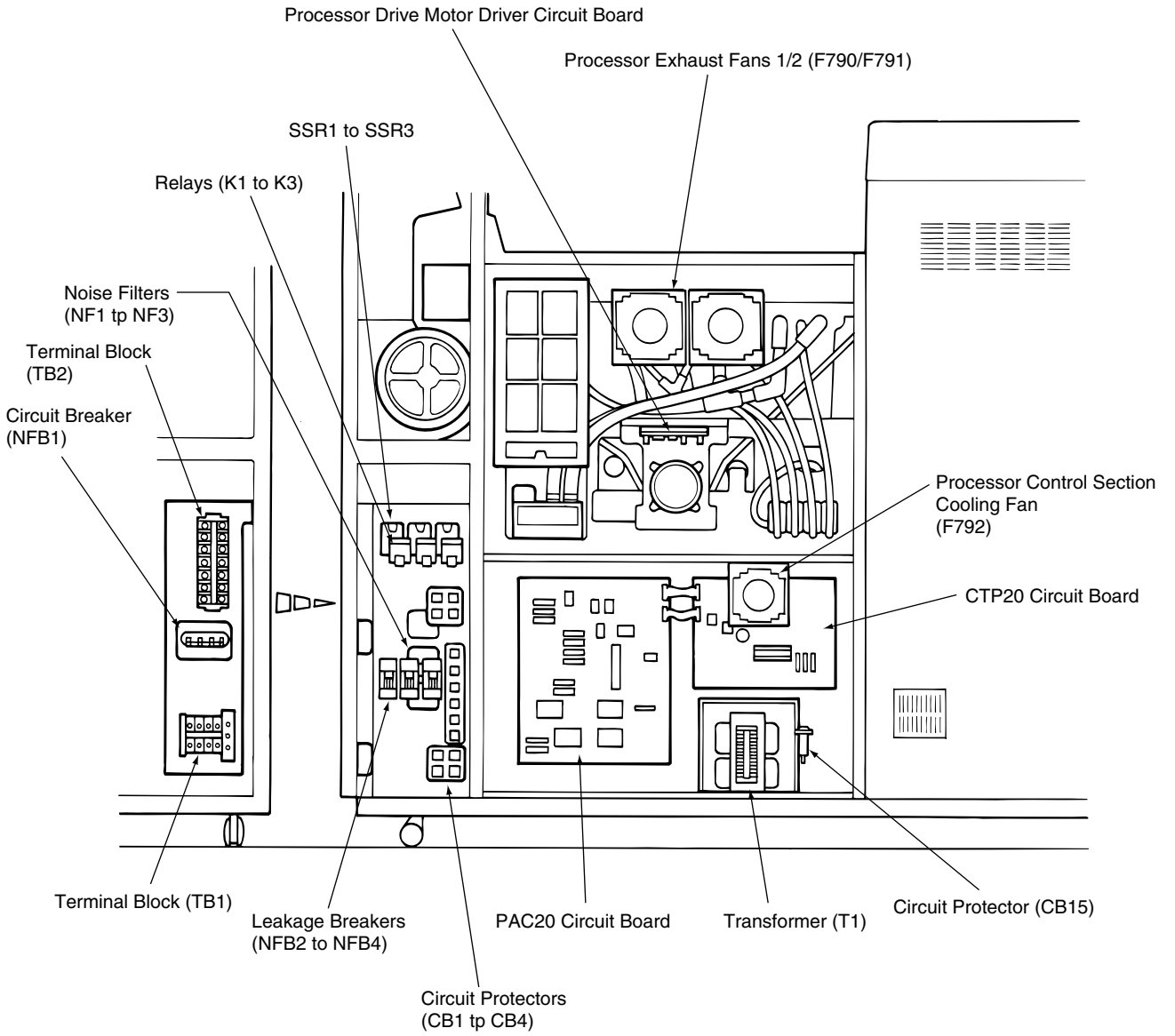
### 3.3.7 Processor Electrical Equipment Section Configuration




EZ1036

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### 3.3.8 Input Power Supply Section Parts and Circuit Functions

| Parts | Symbol | Rating | Circuit |
|---|---|---|---|
| Breaker | NFB1 | 30A | |
| Leakage Breaker | NFB2 | | Processing Solution Heaters (H710, H711), Dryer Heater A-1 |
| | NFB3 | | Processing Solution Heaters (H712, H713), Dryer Heater A-2, Printer DC Power Supply |
| | NFB4 | | Dryer Heater B-1/B-2, AC100V System Load |
| Noise Filter | NF1 | | Processing Solution Heaters (H710, H711), Dryer Heater A-1 |
| | NF2 | | Processing Solution Heaters (H712, H713), Dryer Heater A-2, Printer DC Power Supply |
| Circuit Protector | NF3 | | Dryer Heater B-1/B-2, AC100V System Load |
| | CB1 | 10A | Dryer Heater A-1 |
| | CB2 | 10A | Dryer Heater A-1 |
| | CB3 | 6A | Processing Solution Heaters (H710, H711) |
| | CB4 | 6A | Processing Solution Heaters (H710, H711) |
| | CB5 | 10A | Printer DC Power Supply |
| | CB6 | 10A | Printer DC Power Supply |
| | CB7 | 6A | Processing Solution Heaters (H712, H713) |
| | CB8 | 6A | Processing Solution Heaters (H712, H713) |
| | CB9 | 10A | Dryer Heater A-2 |
| | CB10 | 10A | Dryer Heater A-2 |
| | CB11 | 15A | Dryer Heater B-1, B-2 |
| | CB12 | 15A | Dryer Heater B-1, B-2 |
| | CB13 | 10A | AC100V System Load |
| | CB14 | 10A | AC100V System Load |
| | CB15 | 8A | AC100V System Load |
| Relay | K1 | | Dryer Heater A-1 |
| | K2 | | Dryer Heater A-2 |
| | K3 | | Dryer Heater B-1, B-2 |
| SSR | SSR1 | | Dryer Heater A-1 |
| | SSR2 | | Dryer Heater A-2 |
| | SSR3 | | Dryer Heater B-1, B-2 |

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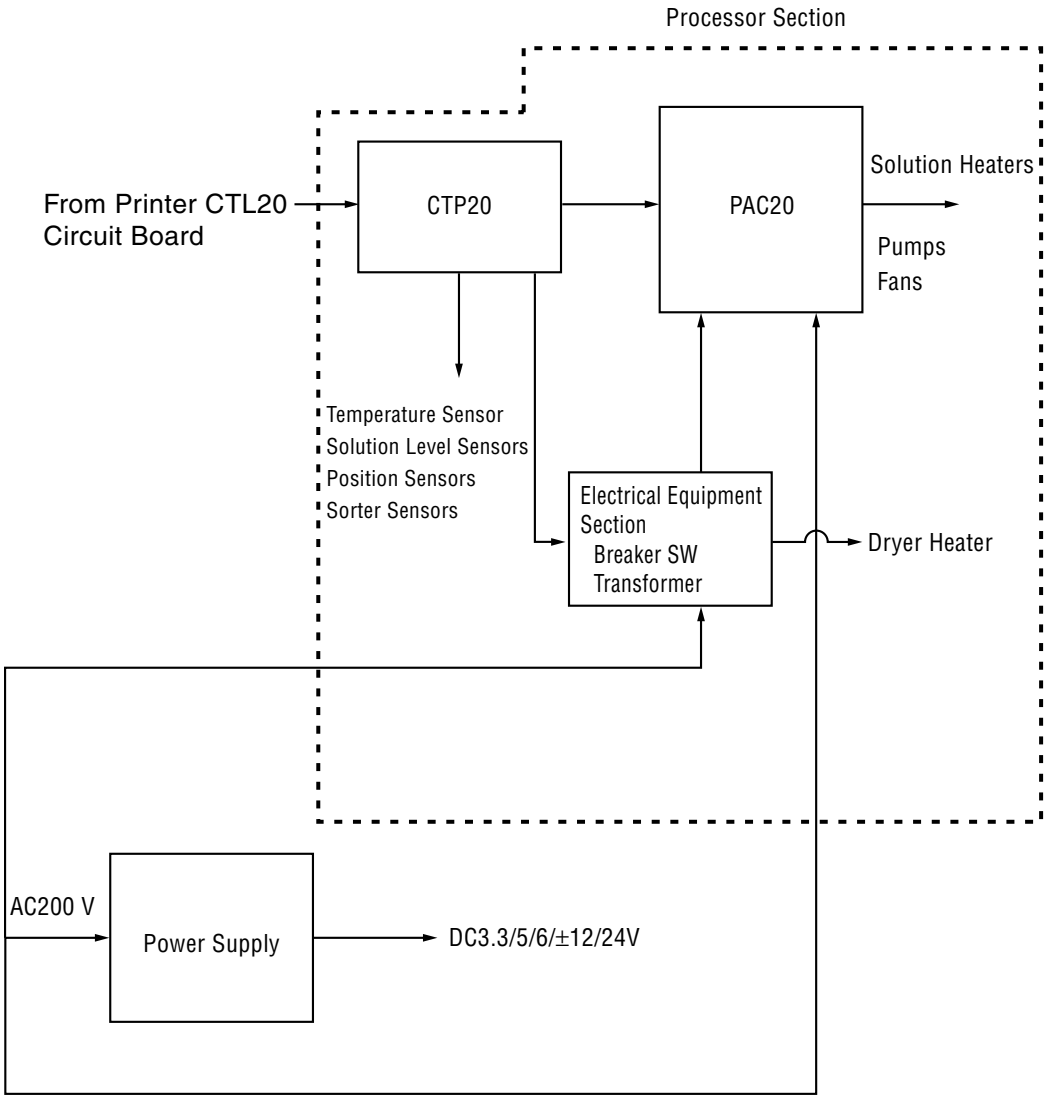
### 3.3.9 Circuit Board Main Functions

| Circuit Board | Functions |
|---|---|
| CTP20 | Processor Main Control Circuit Board, DC Load (motor, solenoid, fan) Drive Circuit Board |
| PAC20 | Processor AC Load (heater, motor) and DC Load (dryer section drive motor, processor drive motor) Drive Circuit Board |

### 3.3.10 Processor Electrical Equipment Block Diagram



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# 4. OPERATION SEQUENCES


4.1 Scanner ..... 4-3
4.1.1 Power Supply Control of SP3000 ..... 4-3
4.1.2 Scanner Correction ..... 4-4
4.1.3 One-way/Two-way Mode ..... 4-5
4.1.4 Multi-DSP Image Processing ..... 4-6

4.2 Auto Film Carrier NC100AY ..... 4-8
4.2.1 135 Two-way Scanning ..... 4-8
4.2.2 135 One-way Scanning ..... 4-9
4.2.3 IX240 Scanning ..... 4-10
4.2.4 Initialization ..... 4-11
4.2.5 Machine Data Reading ..... 4-12
4.2.6 Reading Production and Working Information ..... 4-12
4.2.7 Search for Remaining Film (1) ..... 4-13
4.2.8 Search for Remaining Film (2) ..... 4-14
4.2.9 Feed Motor Initialization ..... 4-14
4.2.10 Door Open/Close Motor and Supply Motor Initialization ..... 4-15
4.2.11 Sensor Calibration at Initialization ..... 4-17

4.3 Paper Feed ..... 4-18
4.3.1 Initialization ..... 4-18
4.3.2 Shut-down Process ..... 4-23
4.3.3 Cutter Sequence ..... 4-24
4.3.4 Width Guide Position Setting ..... 4-26
4.3.5 Auto Loading ..... 4-27
4.3.6 Auto Rewinding ..... 4-30
4.3.7 Paper Drawing ..... 4-31
4.3.8 Back Printing ..... 4-32
4.3.9 Speed Adjustment ..... 4-33
4.3.10 Soft Nip ..... 4-34
4.3.11 Distribution ..... 4-35
4.3.12 Splice ..... 4-38
4.3.13 Paper End Process ..... 4-38

4.4 Exposure Section ..... 4-39
4.4.1 Start-up Initialization ..... 4-39
4.4.2 End Process ..... 4-40
4.4.3 Feed Start ..... 4-40
4.4.4 Exposure Preparation ..... 4-41
4.4.5 Exposure Completion/RLD Exposure Stop ..... 4-42
4.4.6 Feed Completion ..... 4-42

4.5 Processor ..... 4-43
4.5.1 Heat-up Operation ..... 4-43
4.5.2 Normal Warm-up Operation ..... 4-44
4.5.3 Pre-heat Operation ..... 4-45
4.5.4 Cool-down Operation ..... 4-45

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4.5.5 Heater Cooling Fan ..... 4-46
4.5.6 Monitoring Processing Solution Level ..... 4-46
4.5.7 Normal Operation Drive Control ..... 4-47
4.5.8 Auto Intermittent Operation Control ..... 4-47
4.5.9 Auto Cleaning Control ..... 4-48
4.5.10 Auto Cleaning Output Measurement ..... 4-49
4.5.11 Replenishment Pump Control ..... 4-50
4.5.12 Replenishment Initialization Control ..... 4-50
4.5.13 P1-R Replenishment Control ..... 4-51
4.5.14 P2-RA/P2-RB Replenishment Control ..... 4-54
4.5.15 Auto Opening Control ..... 4-57
4.5.16 Replenisher Level Adjustment ..... 4-59
4.5.17 Cleaning/Dilution ..... 4-60
4.5.18 Replenisher Cartridge Cap Cleaning Control ..... 4-62
4.5.19 Power Supply Restore Control ..... 4-63
4.5.20 Error Display Control ..... 4-64
4.5.21 Error Restore Control ..... 4-65
4.5.22 Pump Output Measurement ..... 4-65
4.5.23 Auto Replenishment Control (at installation) ..... 4-66
4.5.24 Intermittent Process ..... 4-67
4.5.25 Waste Solution Process ..... 4-68
4.5.26 Dryer Section Heat-up Control ..... 4-68
4.5.27 Dryer Section Temperature Adjustment ..... 4-69
4.5.28 Dryer Section Pre-heat Control ..... 4-69
4.5.29 Dryer Section Pre-heat Drive Temperature Adjustment ..... 4-70
4.5.30 Dryer Section Cool-down Control ..... 4-70

4.6 Densitometer ..... 4-71
4.6.1 Densitometer AD100 ..... 4-71
4.6.2 Densitometer AD200 ..... 4-75

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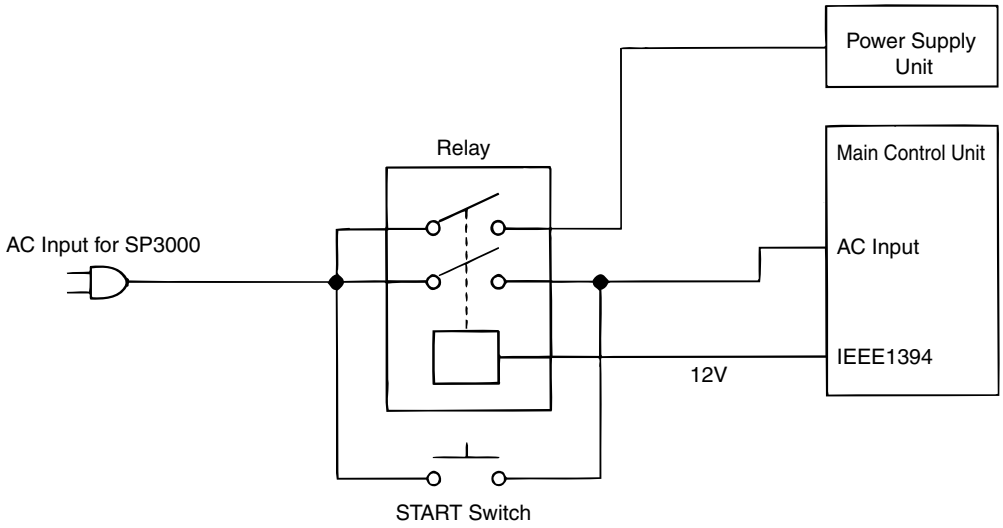
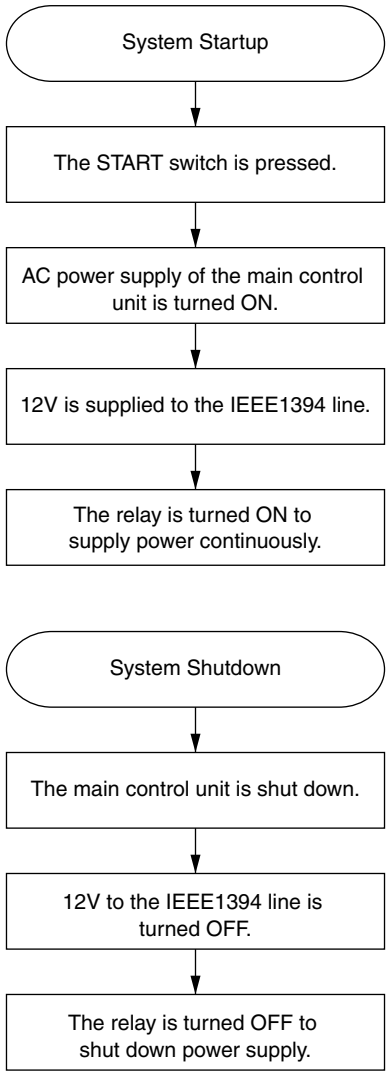
# 4.1 Scanner

### 4.1.1 Power Supply Control of SP-3000





System Startup
The START switch is pressed.
AC power supply of the main control unit is turned ON.
12V is supplied to the IEEE1394 line.
The relay is turned ON to supply power continuously.
System Shutdown
The main control unit is shut down.
12V to the IEEE1394 line is turned OFF.
The relay is turned OFF to shut down power supply.

*NOTE:* • *Wait 12 seconds or more when restarting the system.*
• *The LP1500SC/LP2000SC can be started up by the clock-timer; however the SP-3000 has no timer function.*
• *Always start up the LP1500SC/LP2000SC first, then the SP3000. If the SP-3000 has been started up first, it will enter stand-alone function mode.*

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### 4.1.2 Scanner Correction

1) Function

| Item | Function |
|---|---|
| Darkness Correction | To adjust light shielding output of each CCD pixel to zero. |
| Brightness Correction | To correct sensitivity and shading of each CCD pixel. |

*NOTE: Both dark and brightness corrections are executed by performing scanner correction.*

2) Brightness correction table exists for each carrier/mask.

| Carrier | Mask | Brightness Correction Table | Darkness Correction Table |
|---|---|---|---|
| NC100AY | 135F | ○ | Common for all carriers/masks |
| | 135H | ○ | |
| | IX240 | —* | |
| MFC10AY | 120 diffusion box | ○ | |
| | 135 diffusion box | ○ | |

* Brightness correction for NC100AY IX240 mask is unnecessary because a 135F table is used for IX240.

3) Brightness/Darkness Correction Timing

| Timing | Brightness Correction | Darkness Correction | Message Indication |
|---|---|---|---|
| At system startup | — | ○ | No message appears. |
| When “Scanner Correction” is started in “Pre-operational Check” | ○ | ○ | Scanner correction screen |
| When printing screen is displayed (Only for masks not performed scanner correction in Pre-operational check. | ○ | ○ | The “Setting scanner correction data” message appears. |
| One order (sort) is completed. | — | ○ | No darkness correction message appears because correction time too short. |
| When a film is inserted after more than ten minutes elapsed from previous darkness correction. | — | — | The “Darkness correction is in process.” message appears. |

*NOTE: Brightness/darkness correction can be performed in Menu 0340 “Darkness Correction/Brightness Correction”.*
*When the carrier already performed scanner correction is installed again, the “Downloading the scanner correction data.” message appears and brightness correction data is downloaded.*

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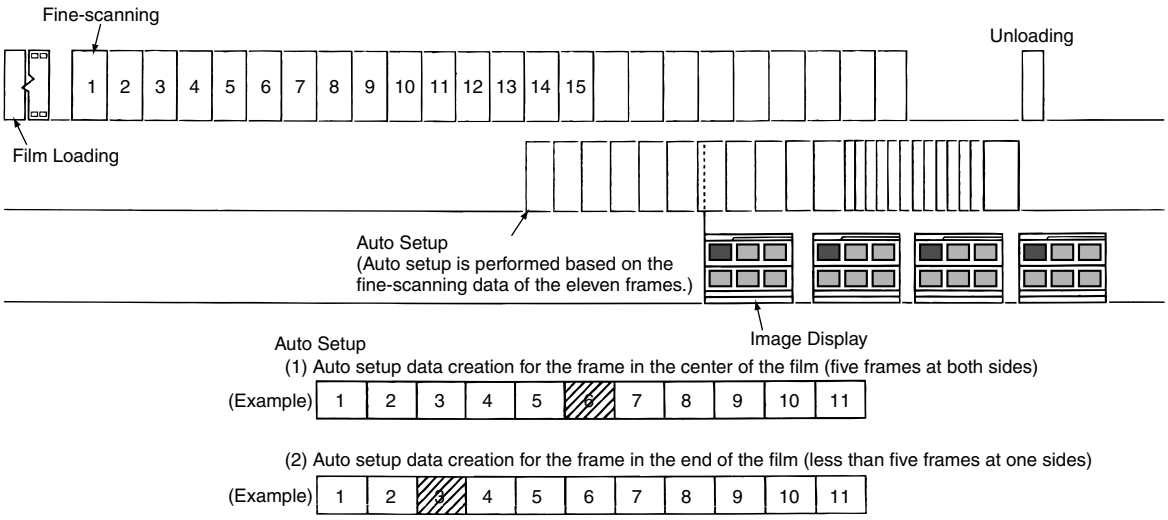
### 4.1.3 One-way/Two-way Mode

1. One-way Mode

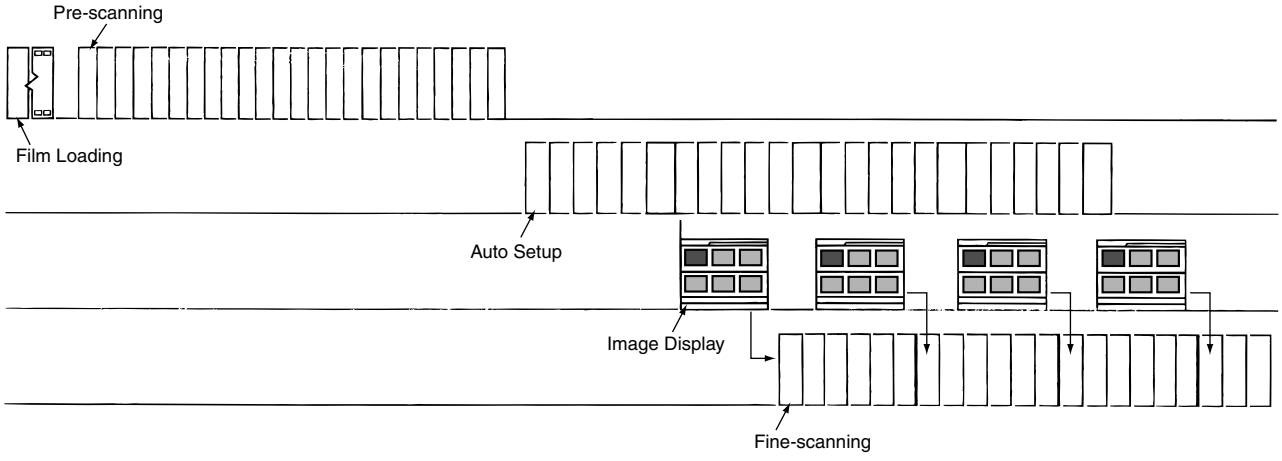
One-way mode is for high speed scanning of 135 first printing (82/120mm F (full)/P (panorama) mix, 127×89mm, 152×102mm).
- Fine scanning is carried out with one film passing. (Pre-scanning carried out for two-way mode is not performed.)
- Auto setup is performed based on fine scanning data of eleven frames.
- Images are displayed after auto setup of six frames.


Fine-scanning
Unloading
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Film Loading
Auto Setup
(Auto setup is performed based on the fine-scanning data of the eleven frames.)
Image Display
Auto Setup
(1) Auto setup data creation for the frame in the center of the film (five frames at both sides)
(Example) 1 2 3 4 5 6 7 8 9 10 11
(2) Auto setup data creation for the frame in the end of the film (less than five frames at one sides)
(Example) 1 2 3 4 5 6 7 8 9 10 11

ZII529

2. Two-way Mode

- Feed: Pre-scanning
- Return: Fine scanning




ZII530

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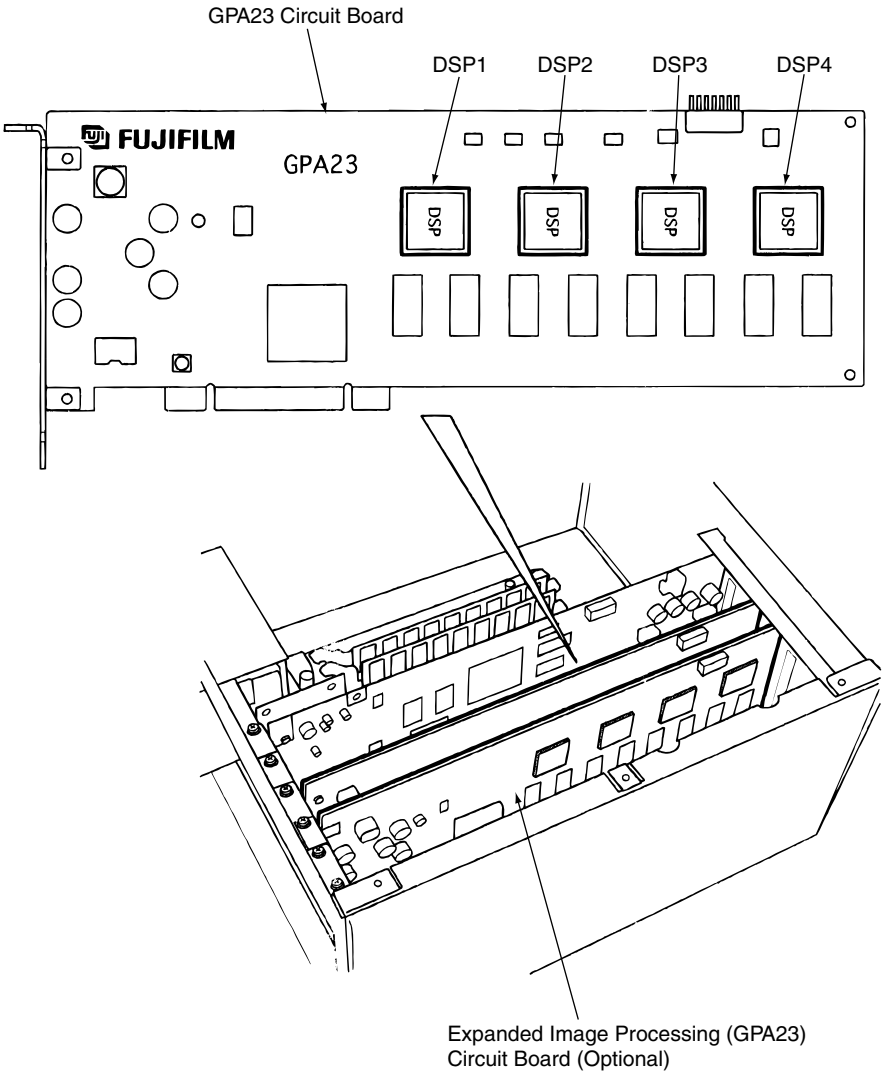
### 4.1.4 Multi-DSP Image Processing




DSP = Digital Signal Processor

ZII538

1. Scanning of First Printing [One GPA23 Circuit Board (Standard)]

(1) Normal Condition

| GPA23 Circuit Board | | | |
|---|---|---|---|
| DSP1 | DSP2 | DSP3 | DSP4 |
| ① | ② | ③ | ④ |
| ⑤ | ⑥ | ⑦ | ⑧ |
| ⑨ | ⑩ | . . . . . | |

(2) DSP2 Failure

| GPA23 Circuit Board | | | |
|---|---|---|---|
| DSP1 | DSP2 | DSP3 | DSP4 |
| ① | (Failure) | ② | ③ |
| ④ | | ⑤ | ⑥ |
| ⑦ | | ⑧ | ⑨ |
| ⑩ | | . . . . . | |

* When abnormality is occurred in a GSP on the GPA23 circuit board, an error message is displayed and the DSP is disabled automatically. (Scanning speed may be reduced).
Error Message Codes: E-4241, E-4242, E-4243, E-4251, E-4253, E-4271, E-4272 or E-4273

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* Abnormal DSP can be checked in the Menu 0720 “Image Processing Section Information” screen.

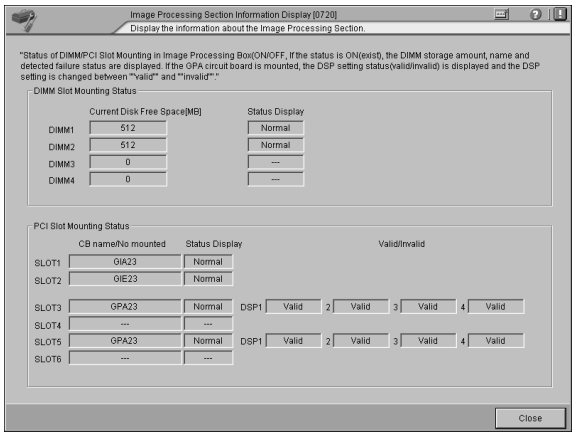
Image Processing Section Information Display [0720]
Display the information about the Image Processing Section.
"Status of DIMM/PCI Slot Mounting in Image Processing Box(ON/OFF, If the status is ON(exist), the DIMM storage amount, name and detected failure status are displayed. If the GPA circuit board is mounted, the DSP setting status(Valid/Invalid) is displayed and the DSP setting is changed between "Valid" and "Invalid"."
DIMM Slot Mounting Status
Current Disk Free Space[MB]
Status Display
DIMM1 512 Normal
DIMM2 512 Normal
DIMM3 0 ---
DIMM4 0 ---
PCI Slot Mounting Status
CB name/No mounted
Status Display
Valid/Invalid
SLOT1 GIA23 Normal
SLOT2 GIE23 Normal
SLOT3 GPA23 Normal DSP1 Valid 2 Valid 3 Valid 4 Valid
SLOT4 --- ---
SLOT5 GPA23 Normal DSP1 Valid 2 Valid 3 Valid 4 Valid
SLOT6 --- ---
Close

DSP Valid/Invalid:
“Valid”: Normal condition
“Invalid”: “Invalid” is selected.
“- “: Abnormal condition

2. Large Size Scanning (Example of 8-scanning pixel shifting)[One GPA23 Circuit Board (Standard)]

GPA23 Circuit Board

| DSP1 | DSP2 | DSP3 | DSP4 |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| ⋮ | | | |
| ⋮ | | | |

3. Large Size Scanning (Example of 8-scanning pixel shifting)[Two GPA23 Circuit Board (Added an optional circuit board)]

(1) Printing

GPA23 Circuit Board

| DSP1 | DSP2 | DSP3 | DSP4 |
|---|---|---|---|
| 1 | | | |
| 3 | | | |

GPA23 Circuit Board (Added)

| DSP1 | DSP2 | DSP3 | DSP4 |
|---|---|---|---|
| 2 | | | |
| 4 | | | |

(2) Printing + Digitizing

GPA23 Circuit Board

| DSP1 | DSP2 | DSP3 | DSP4 |
|---|---|---|---|
| Printing 1 | | | |
| Printing 2 | | | |

GPA23 Circuit Board (Added)

| DSP1 | DSP2 | DSP3 | DSP4 |
|---|---|---|---|
| Digitizing 1 | | | |
| Digitizing 2 | | | |

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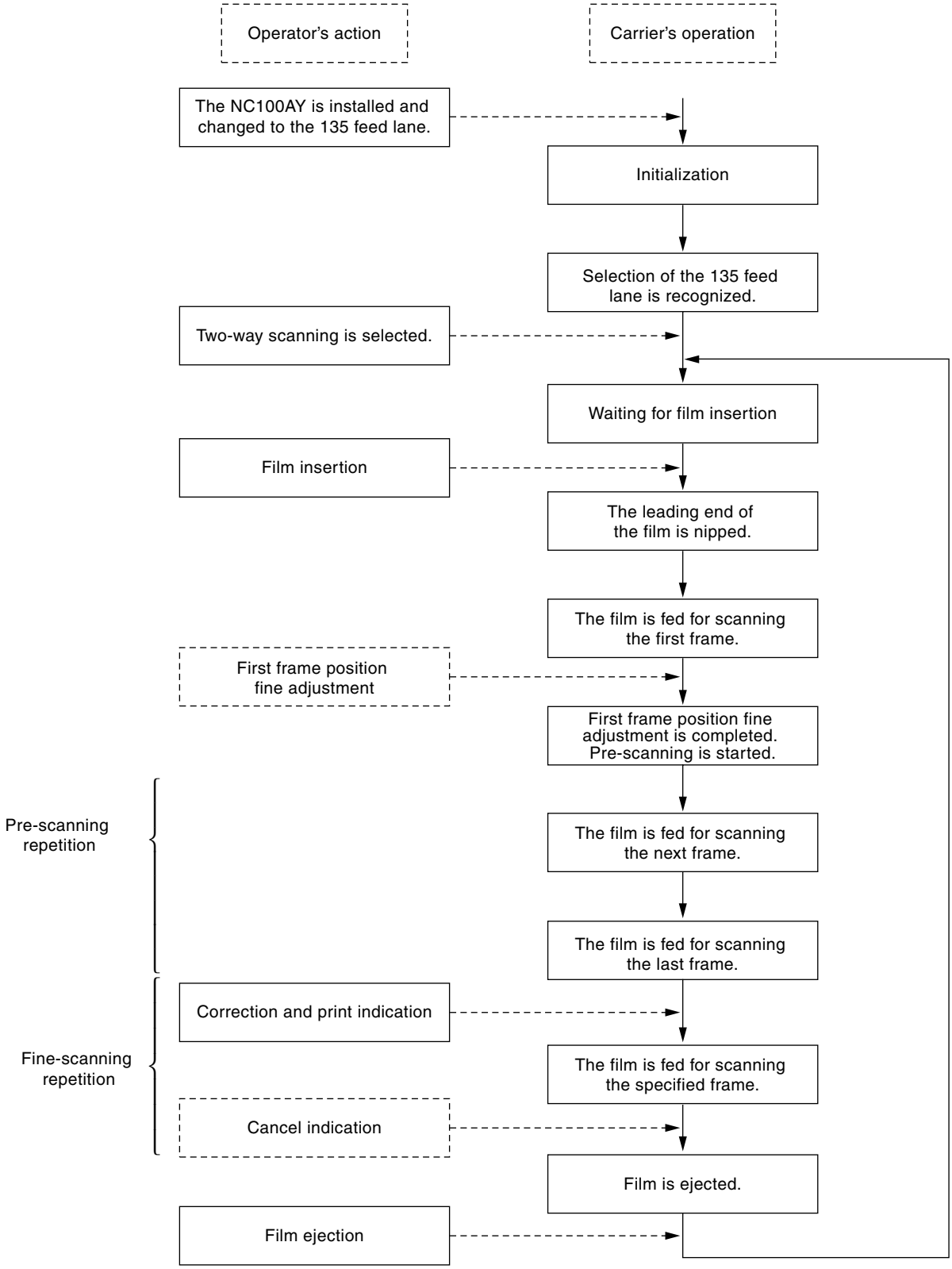
# 4.2 Auto Film Carrier NC100AY

### 4.2.1 135 Two-way Scanning


Operator's action
Carrier's operation
The NC100AY is installed and changed to the 135 feed lane.
Initialization
Selection of the 135 feed lane is recognized.
Two-way scanning is selected.
Waiting for film insertion
Film insertion
The leading end of the film is nipped.
The film is fed for scanning the first frame.
First frame position fine adjustment
First frame position fine adjustment is completed. Pre-scanning is started.
Pre-scanning repetition
The film is fed for scanning the next frame.
The film is fed for scanning the last frame.
Correction and print indication
Fine-scanning repetition
The film is fed for scanning the specified frame.
Cancel indication
Film is ejected.
Film ejection

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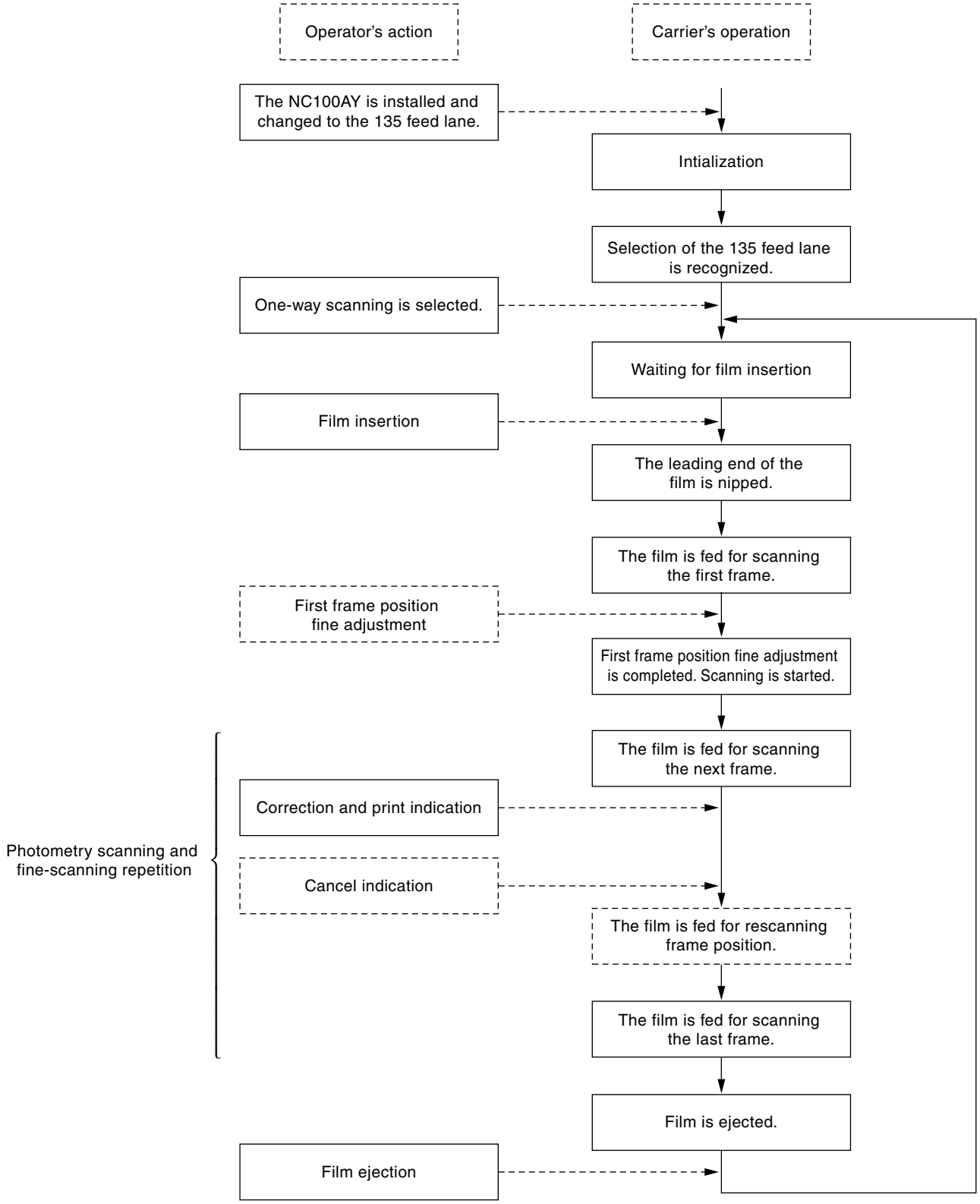
### 4.2.2 135 One-way Scanning


Operator's action
Carrier's operation
The NC100AY is installed and changed to the 135 feed lane.
Intialization
Selection of the 135 feed lane is recognized.
One-way scanning is selected.
Waiting for film insertion
Film insertion
The leading end of the film is nipped.
The film is fed for scanning the first frame.
First frame position fine adjustment
First frame position fine adjustment is completed. Scanning is started.
The film is fed for scanning the next frame.
Correction and print indication
Photometry scanning and fine-scanning repetition
Cancel indication
The film is fed for rescanning frame position.
The film is fed for scanning the last frame.
Film is ejected.
Film ejection

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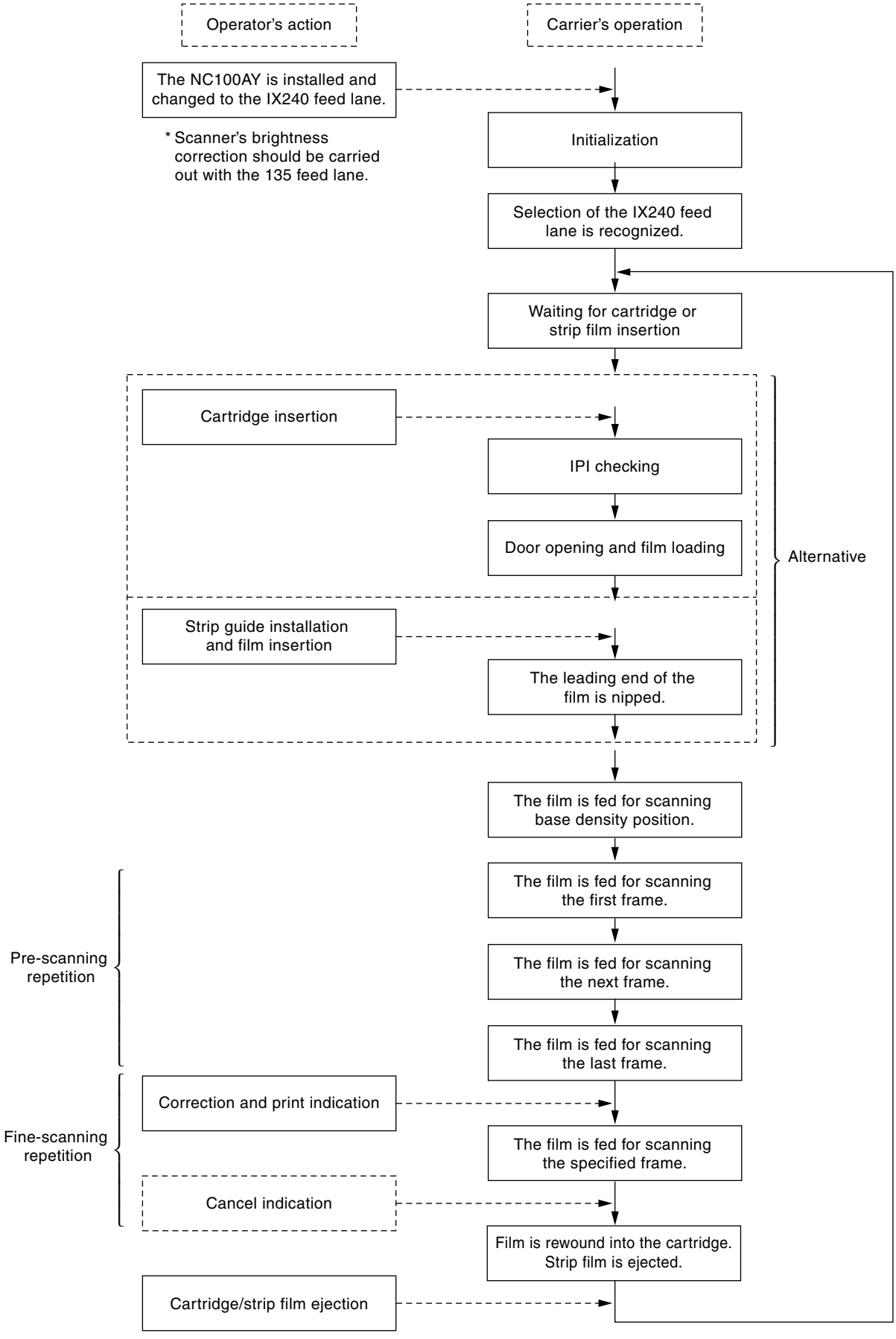
### 4.2.3 IX240 Scanning


Operator's action
Carrier's operation
The NC100AY is installed and changed to the IX240 feed lane.
* Scanner's brightness correction should be carried out with the 135 feed lane.
Initialization
Selection of the IX240 feed lane is recognized.
Waiting for cartridge or strip film insertion
Cartridge insertion
IPI checking
Door opening and film loading
Strip guide installation and film insertion
The leading end of the film is nipped.
Alternative
The film is fed for scanning base density position.
The film is fed for scanning the first frame.
The film is fed for scanning the next frame.
The film is fed for scanning the last frame.
Pre-scanning repetition
Correction and print indication
The film is fed for scanning the specified frame.
Cancel indication
Fine-scanning repetition
Film is rewound into the cartridge. Strip film is ejected.
Cartridge/strip film ejection

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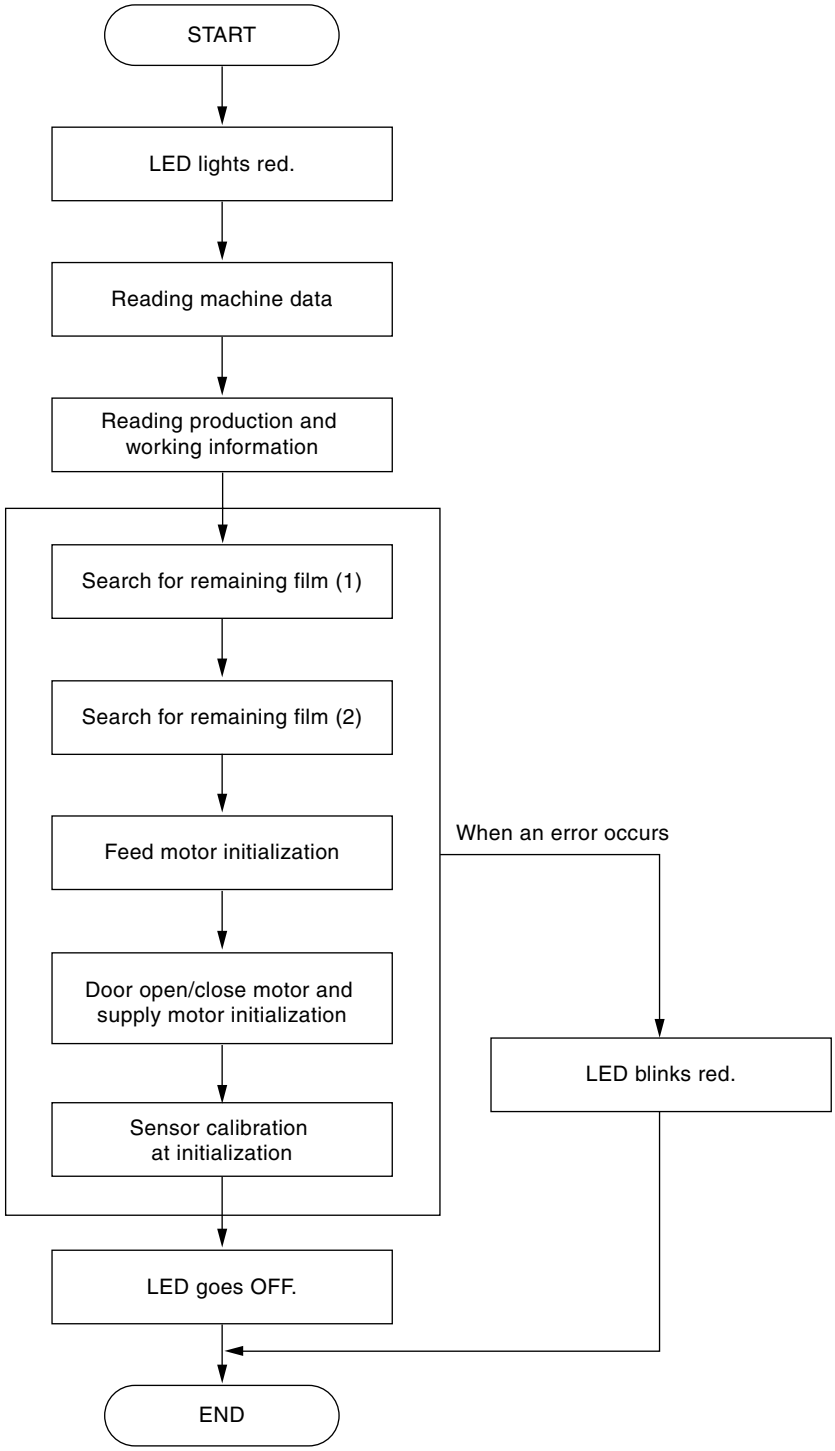
### 4.2.4 Initialization



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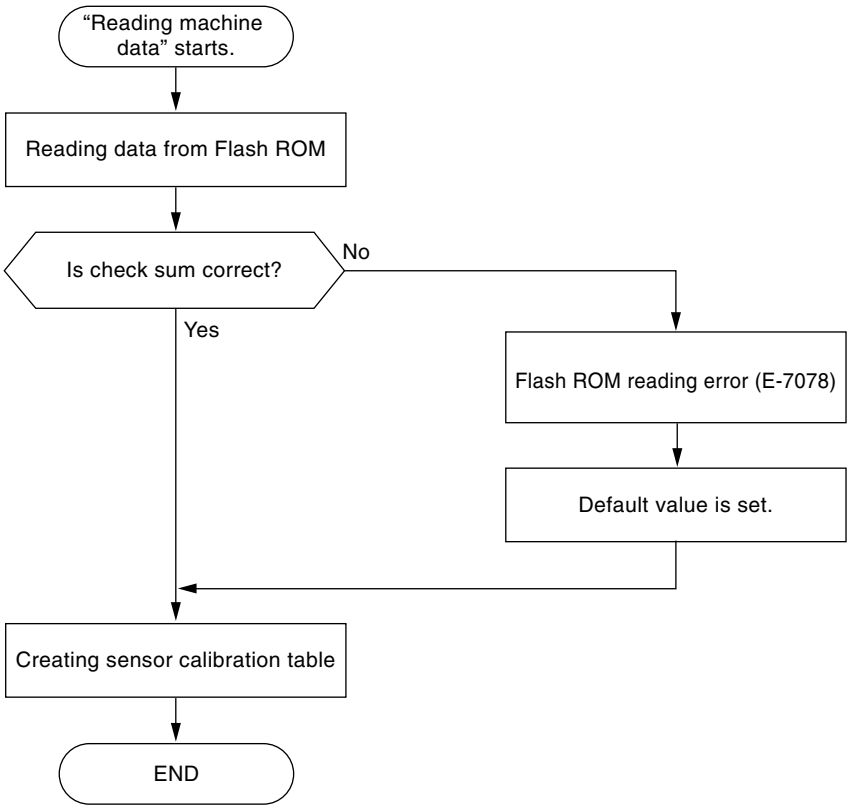
### 4.2.5 Machine Data Reading

Machine data of the carrier is read from the Flash ROM. If the check sum is incorrect, an error is notified and the sequence is continued using the default value.

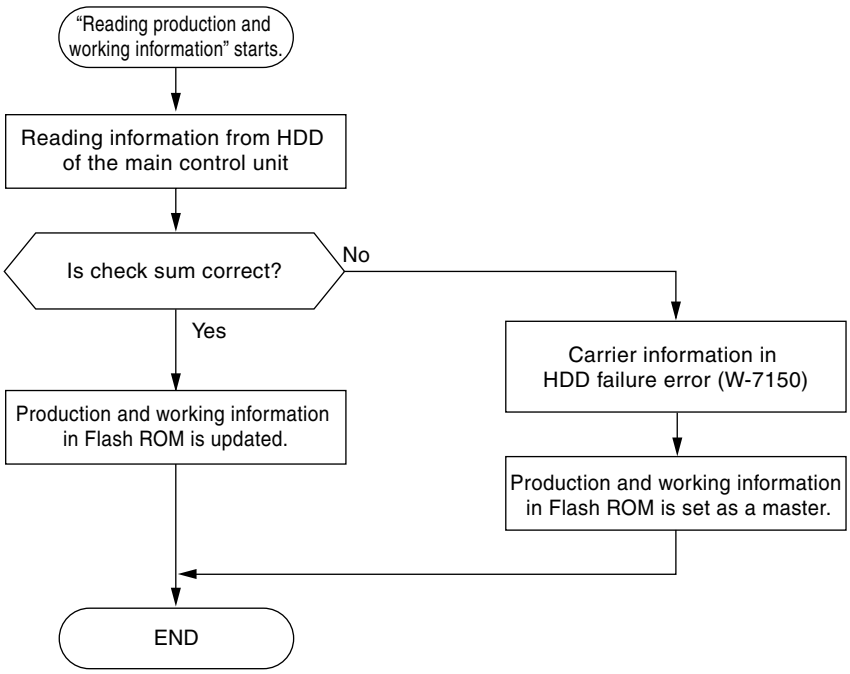





4.2.5
4.2.6

### 4.2.6 Reading Production and Working Information

Production and working information is read from the hard disk of the main control unit.


"Reading production and working information" starts.
Reading information from HDD of the main control unit
Is check sum correct?
No
Yes
Carrier information in HDD failure error (W-7150)
Production and working information in Flash ROM is updated.
Production and working information in Flash ROM is set as a master.
END

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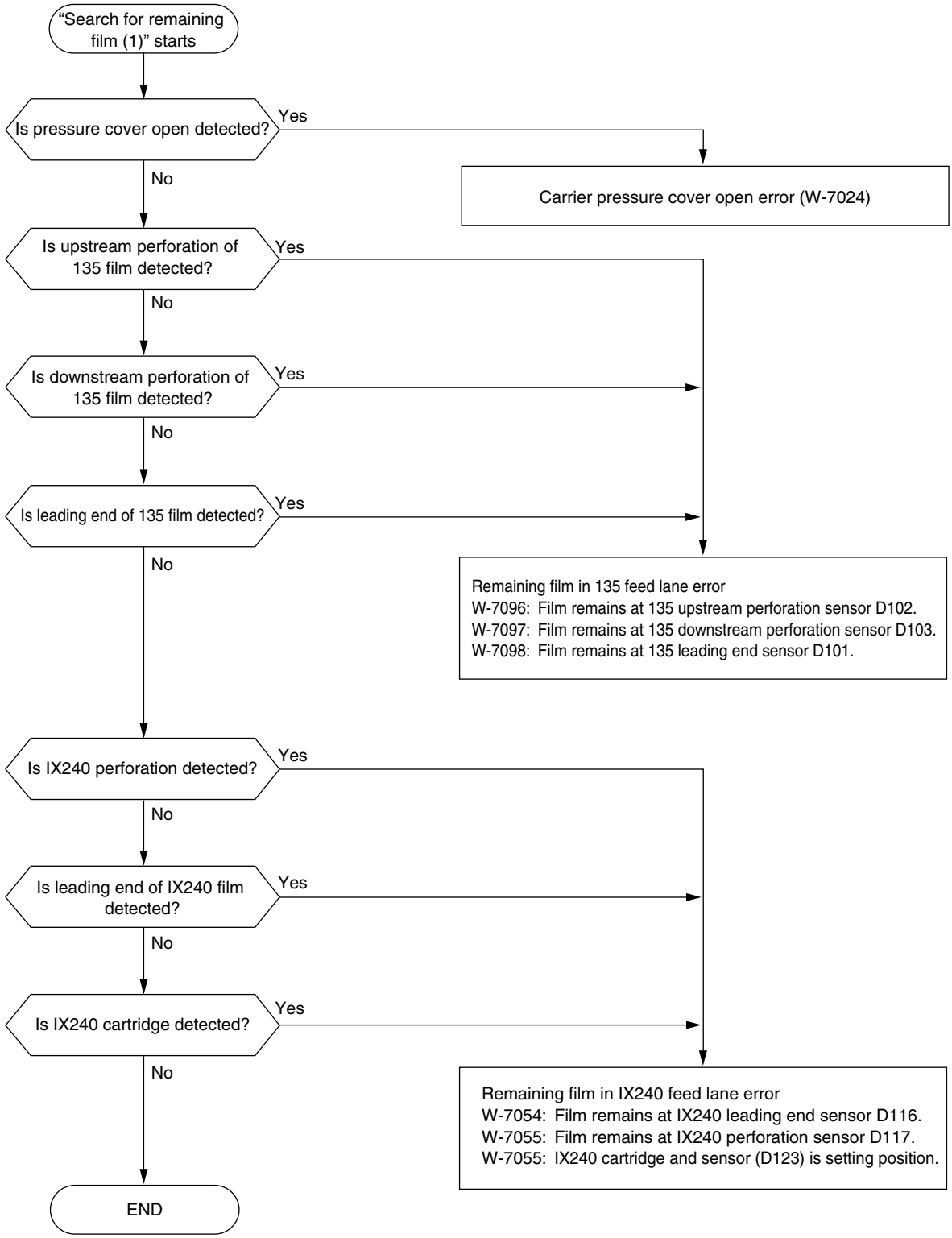
### 4.2.7 Search for Remaining Film (1)

Remaining film in the NC100AY is searched.


"Search for remaining film (1)" starts
Is pressure cover open detected?
Yes
Carrier pressure cover open error (W-7024)
No
Is upstream perforation of 135 film detected?
Yes
No
Is downstream perforation of 135 film detected?
Yes
No
Is leading end of 135 film detected?
Yes
No
Remaining film in 135 feed lane error
W-7096: Film remains at 135 upstream perforation sensor D102.
W-7097: Film remains at 135 downstream perforation sensor D103.
W-7098: Film remains at 135 leading end sensor D101.
Is IX240 perforation detected?
Yes
No
Is leading end of IX240 film detected?
Yes
No
Is IX240 cartridge detected?
Yes
No
Remaining film in IX240 feed lane error
W-7054: Film remains at IX240 leading end sensor D116.
W-7055: Film remains at IX240 perforation sensor D117.
W-7055: IX240 cartridge and sensor (D123) is setting position.
END

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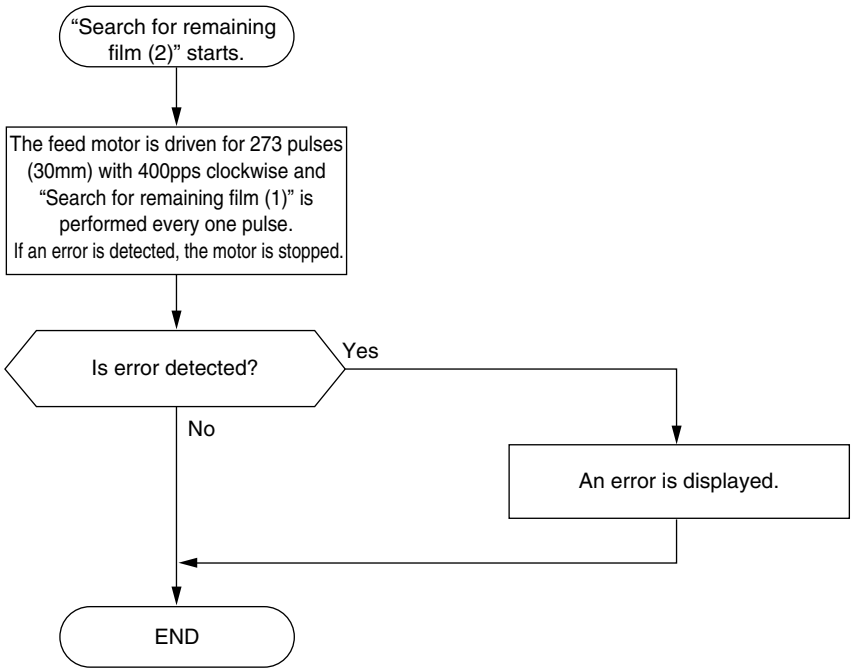
### 4.2.8 Search for Remaining Film (2)

Remaining film in the NC100AY is searched while turning the feed motor.
This sequence is performed in parallel with the feed motor initialization.

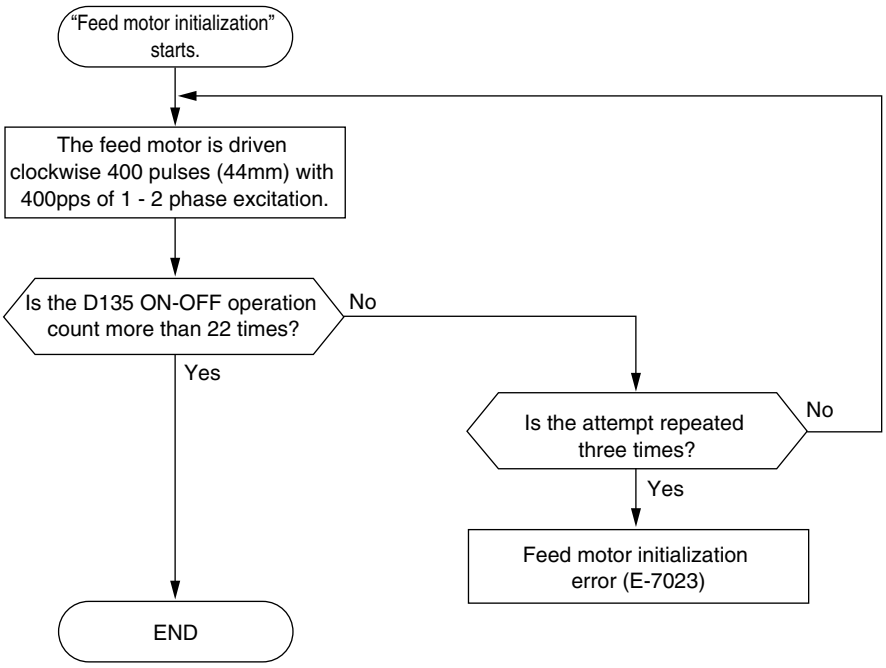

"Search for remaining film (2)" starts.
The feed motor is driven for 273 pulses (30mm) with 400pps clockwise and "Search for remaining film (1)" is performed every one pulse.
If an error is detected, the motor is stopped.
Is error detected?
Yes
No
An error is displayed.
END



### 4.2.9 Feed Motor Initialization

The feed motor is turned for specified pulses to make sure the encoder output changes the prescribed number of times.
This sequence is performed in parallel with the remaining film search (2).

4.2.8
4.2.9


"Feed motor initialization" starts.
The feed motor is driven clockwise 400 pulses (44mm) with 400pps of 1 - 2 phase excitation.
Is the D135 ON-OFF operation count more than 22 times?
No
Yes
Is the attempt repeated three times?
No
Yes
Feed motor initialization error (E-7023)
END

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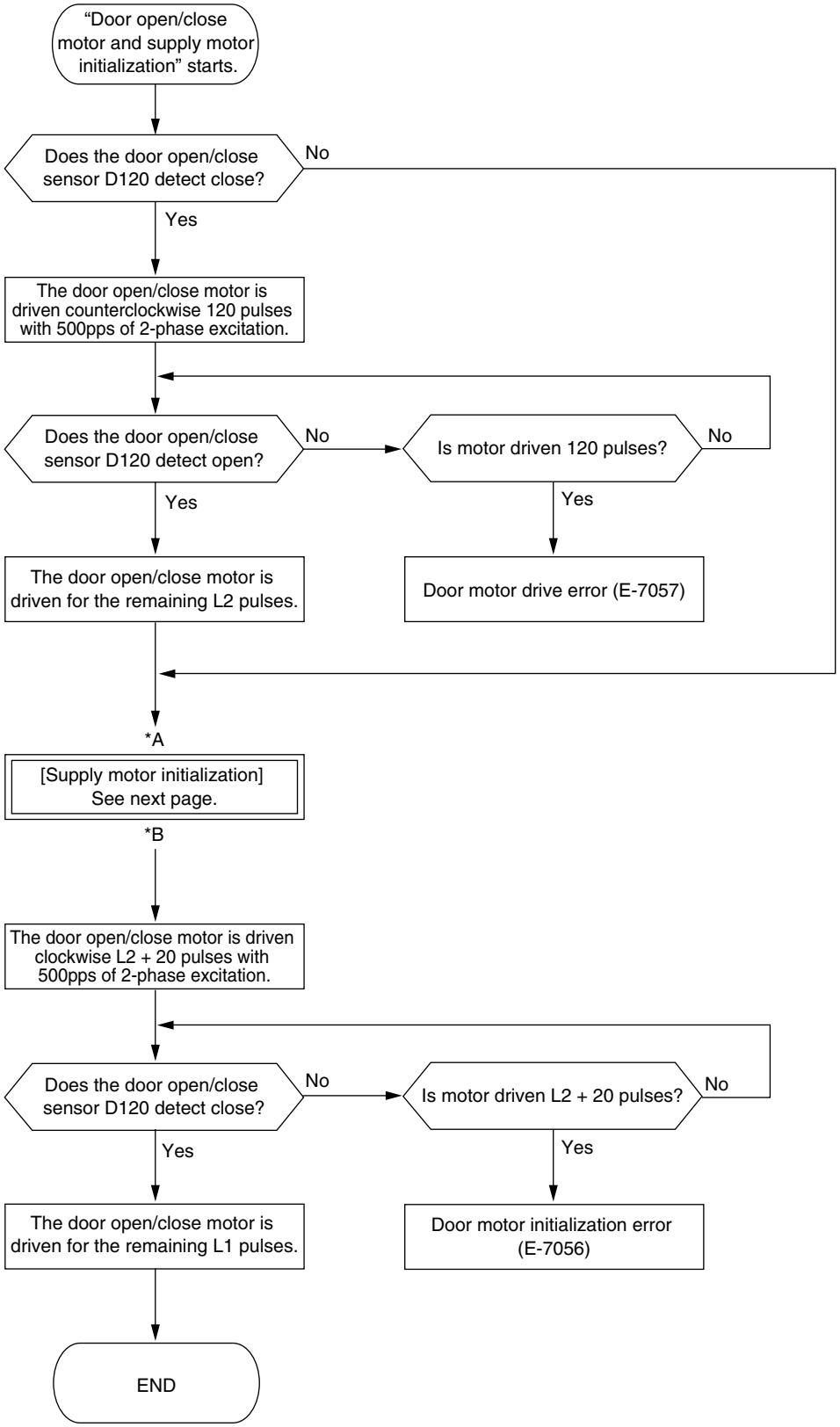
### 4.2.10 Door Open/Close Motor and Supply Motor Initialization

The door driver shaft and spool are positioned as prescribed.


"Door open/close motor and supply motor initialization" starts.
Does the door open/close sensor D120 detect close?
No
Yes
The door open/close motor is driven counterclockwise 120 pulses with 500pps of 2-phase excitation.
Does the door open/close sensor D120 detect open?
No
Is motor driven 120 pulses?
No
Yes
Yes
The door open/close motor is driven for the remaining L2 pulses.
Door motor drive error (E-7057)
*A
[Supply motor initialization]
See next page.
*B
The door open/close motor is driven clockwise L2 + 20 pulses with 500pps of 2-phase excitation.
Does the door open/close sensor D120 detect close?
No
Is motor driven L2 + 20 pulses?
No
Yes
Yes
The door open/close motor is driven for the remaining L1 pulses.
Door motor initialization error (E-7056)
END

L1 and L2: Machine data

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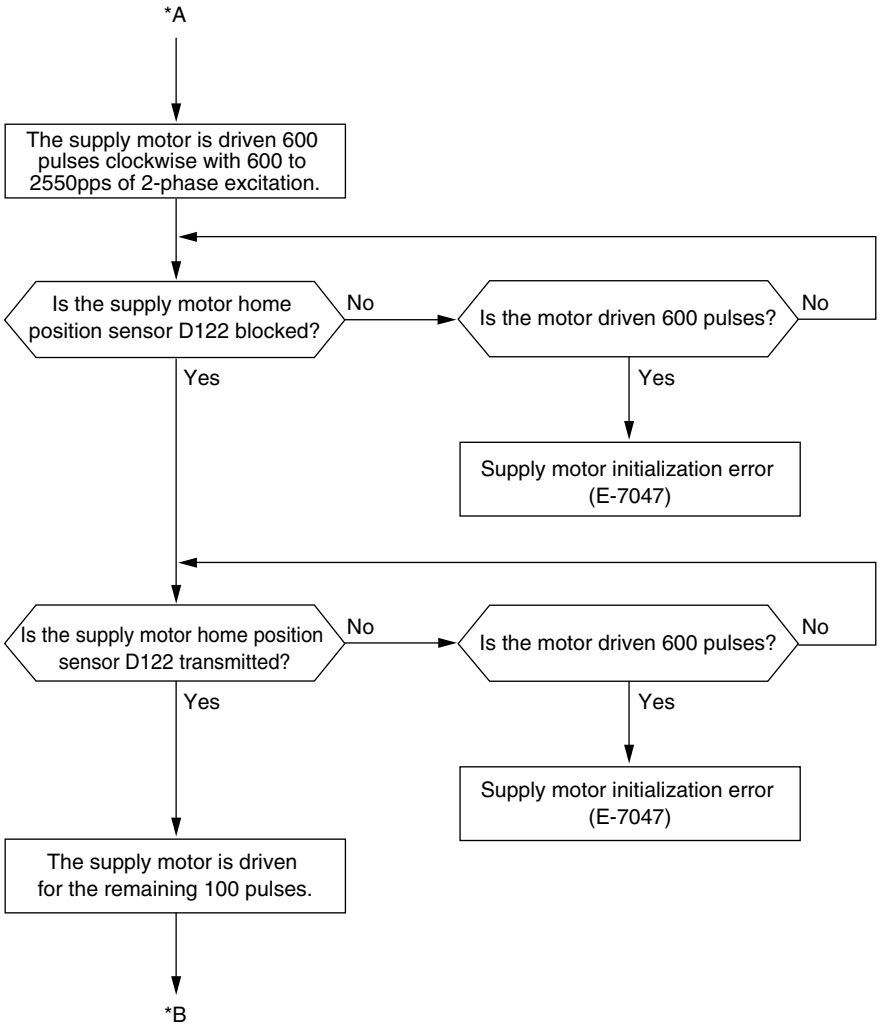
**[Supply Motor Initialization]**


*A
The supply motor is driven 600 pulses clockwise with 600 to 2550pps of 2-phase excitation.
Is the supply motor home position sensor D122 blocked?
No
Is the motor driven 600 pulses?
No
Yes
Yes
Supply motor initialization error (E-7047)
Is the supply motor home position sensor D122 transmitted?
No
Is the motor driven 600 pulses?
No
Yes
Yes
Supply motor initialization error (E-7047)
The supply motor is driven for the remaining 100 pulses.
*B

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### 4.2.11 Sensor Calibration at Initialization

Calibration tables are created for the following sensors.

| Symbol | Name | Description | Remarks |
|---|---|---|---|
| D101L/P | 135 Leading End Sensor | Green LED/Phototransistor | – |
| D102L/P | 135 Upstream Perforation Sensor | Green LED/Phototransistor | |
| D103L/P | 135 Downstream Perforation Sensor | Green LED/Phototransistor | |
| D104L/P | 135 Check Tape Sensor | Infrared LED/Phototransistor | |
| D106L/P-A | 135 Rear Inner Bar Code Sensor | Red LED/PSD | 2 Outputs |
| D106L/P-B | 135 Rear Outer Bar Code Sensor | | |
| D108L/P-A | 135 Front Inner Bar Code Sensor | Red LED/PSD | 2 Outputs |
| D108L/P-B | 135 Front Outer Bar Code Sensor | | |
| D109L/P | 135 Frame Sensor | Orange LED/PSD | – |
| D110L/P | 135 Frame Sensor | Orange LED/PSD | – |
| D111L/P | 135 Frame Sensor | Orange LED/PSD | – |
| D112L/P | 135 Frame Sensor | Orange LED/PSD | – |
| D114L/P-A | 135 Rear Inner Panorama Sensor | Orange LED/PSD | 2 outputs |
| D114L/P-B | 135 Rear Outer Panorama Sensor | | |
| D115L/P-A | 135 Front Inner Panorama Sensor | Orange LED/PSD | 2 Outputs |
| D115L/P-B | 135 Front Outer Panorama Sensor | | |
| D116L/P-A | IX240 Rear Leading End/Trailing End/Bar Code Sensor | Red LED/PSD | 2 Outputs |
| D116L/P-B | IX240 Front Leading End/Trailing End/Bar Code Sensor | | |
| D117L/P | IX240 Perforation Sensor | Green LED/Phototransistor | – |
| D118L/P | IX240 Rear Unexposed Frame Sensor | Orange LED/PSD | – |
| D119L/P | IX240 Front Unexposed Frame Sensor | Orange LED/PSD | – |

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# 4.3 Paper Feed

## 4.3.1 Initialization

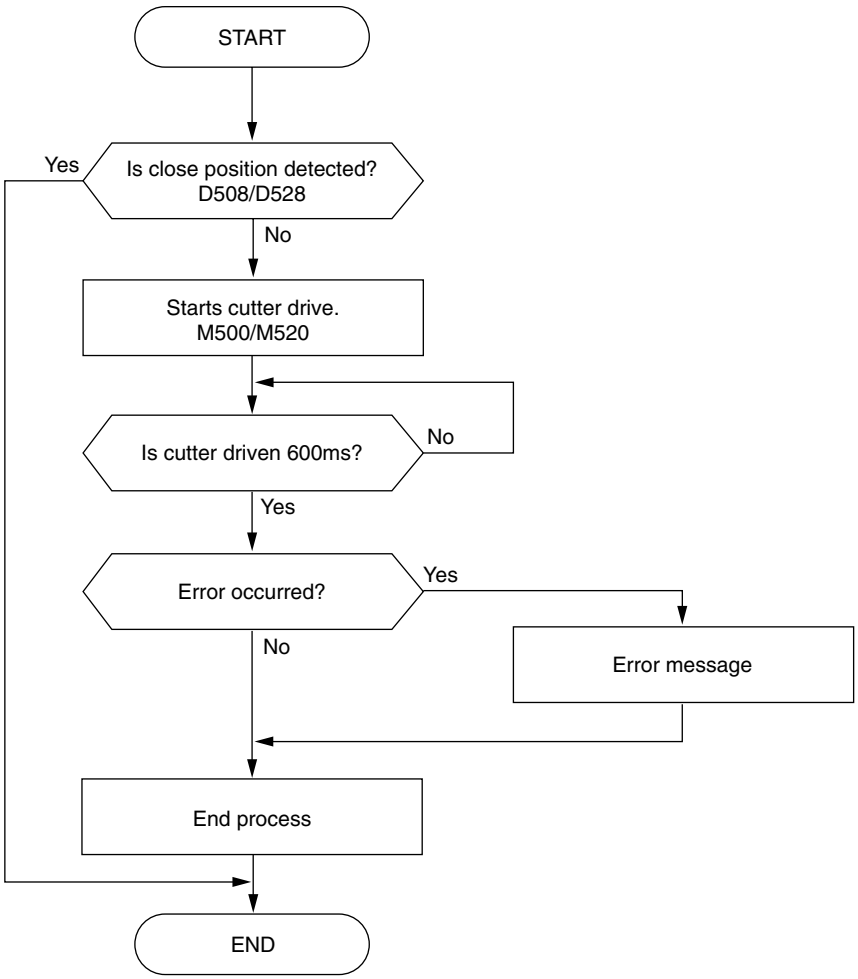
*NOTE: Before starting the initialization, make sure that all covers are firmly closed and the power is not cut by the interlock switches.*

1. Sensor initialization
   Turns OFF the following sensors except the upper/lower splice sensors (D506, D526)
   - Exposure section entrance paper sensor (D561)
   - Pre-exposure paper sensor (D562)
   - Processor entrance 1 sensor (D571)
   - Processor entrance 2 sensor (D572)
   - Processor entrance 3 sensor (D573)

2. Feed motor initialization
   Turns OFF the following motors
   - Upper paper feed motor (M501)
   - Lower paper feed motor (M521)

   Turns ON the following motors
   - Lower side door turn section feed motor (M550)
   - Lower side door section feed motor (M551)
   - Middle side door turn section feed motor (M540)
   - Middle side door section feed motor (M541)
   - Upper side door section feed motor (M542)
   - Pre-exposure feed motor (M560)
   - Sub-scanning motor (M561)
   - Distribution section feed motor (M570)

3. Cutter initialization
   Moves the upper cutter, then lower cutter to their close positions.



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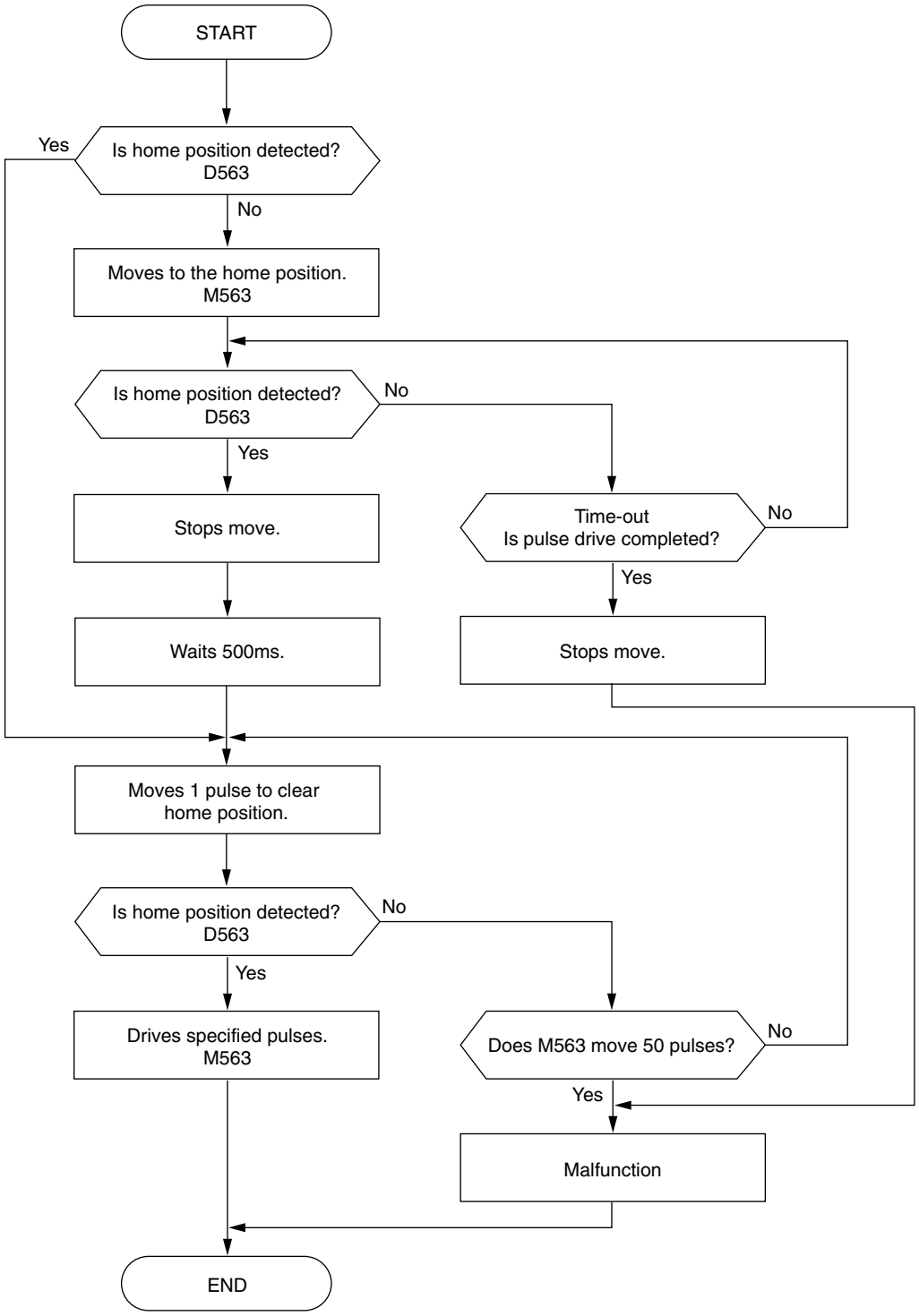
4. Width guide initialization



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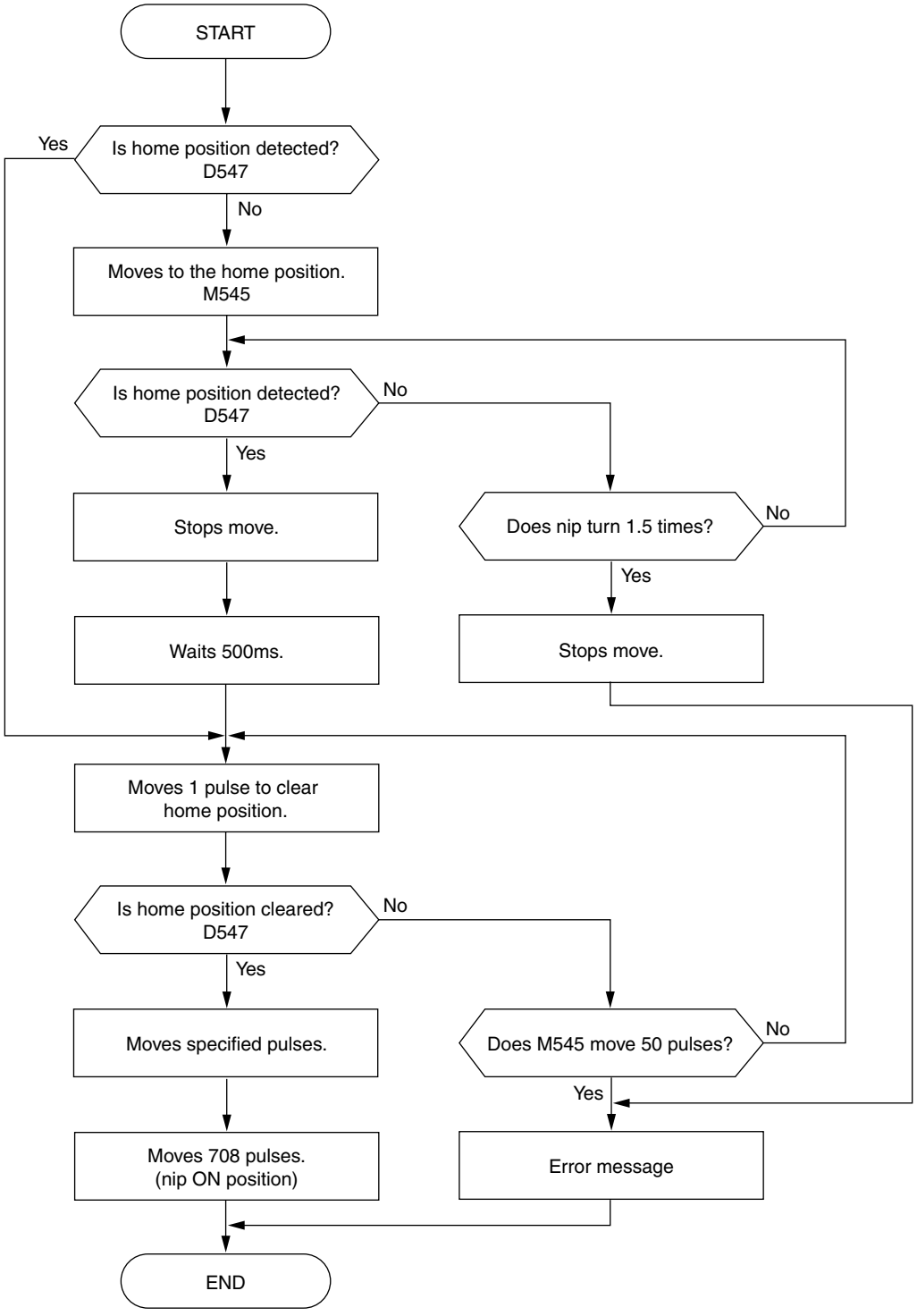
5. Nip initialization

① Speed adjustment section nip

It detects the home position, then moves to the nip position.



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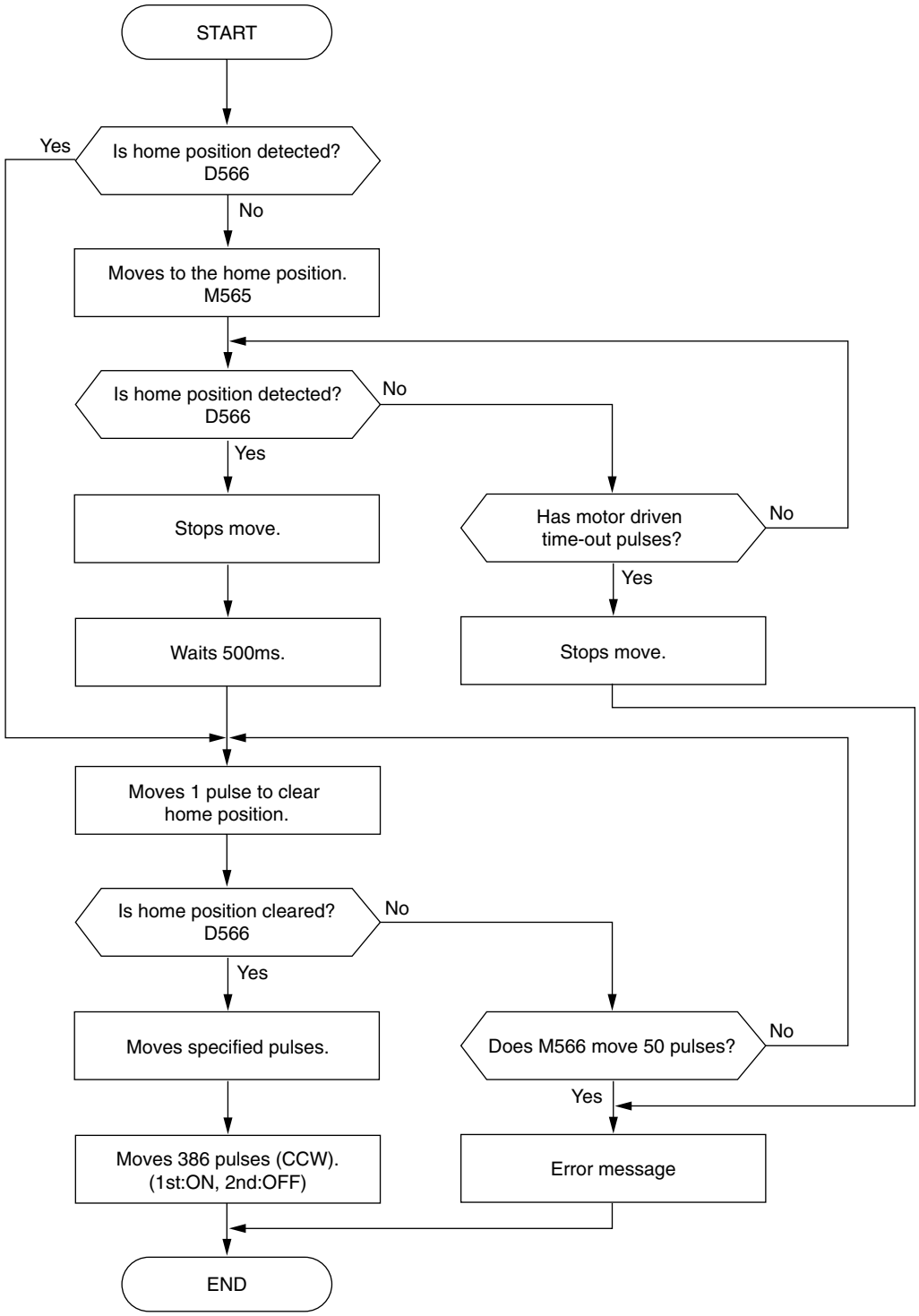
② Soft nip

It detects the home position, then moves to the nip start (1st nip: ON, 2nd nip: OFF) position.



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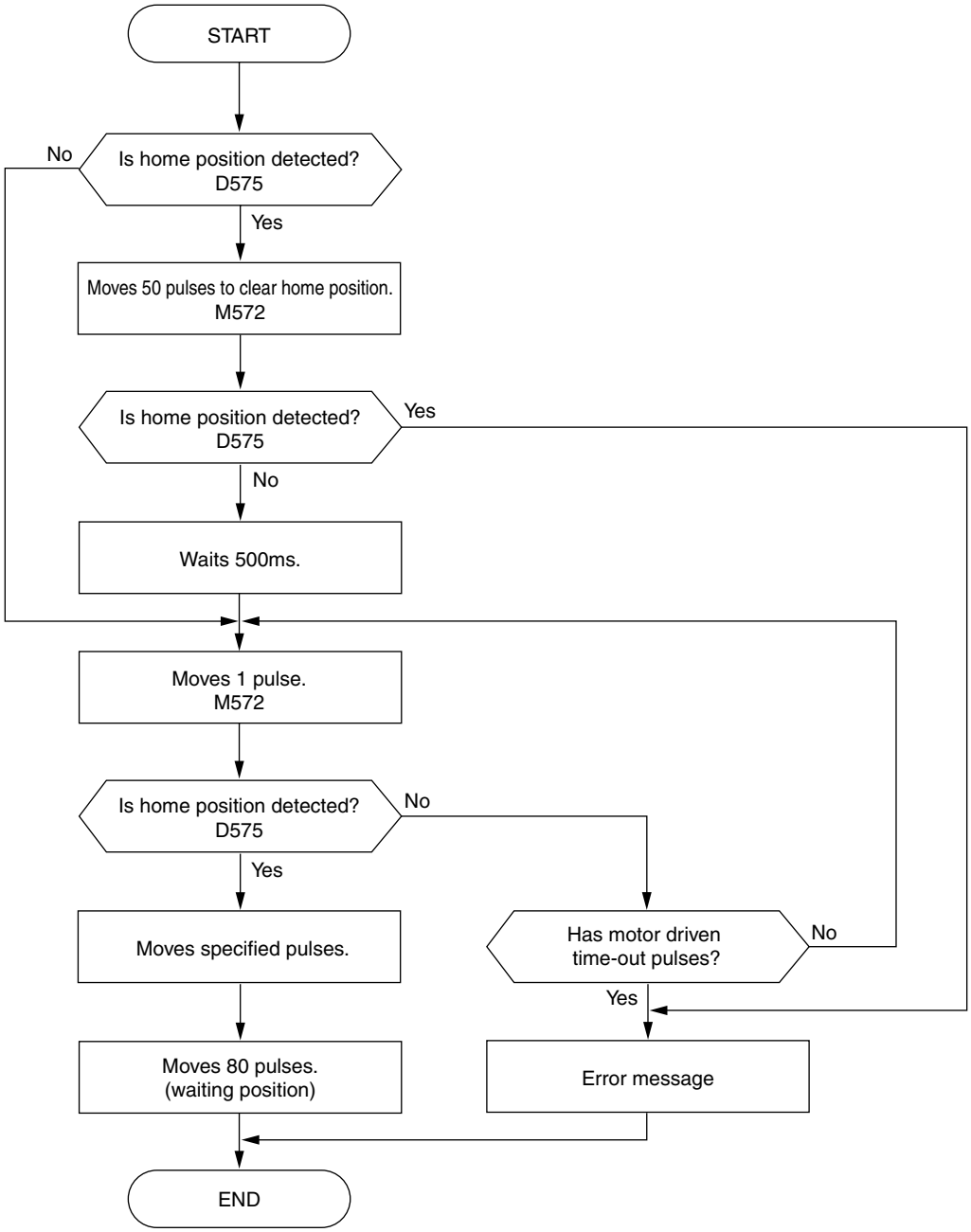
6. Distribution section initialization

It is initialized vertically first, then horizontally.

① Vertical initialization

It detects the vertical home (lower limit) position, then moves to the waiting position.



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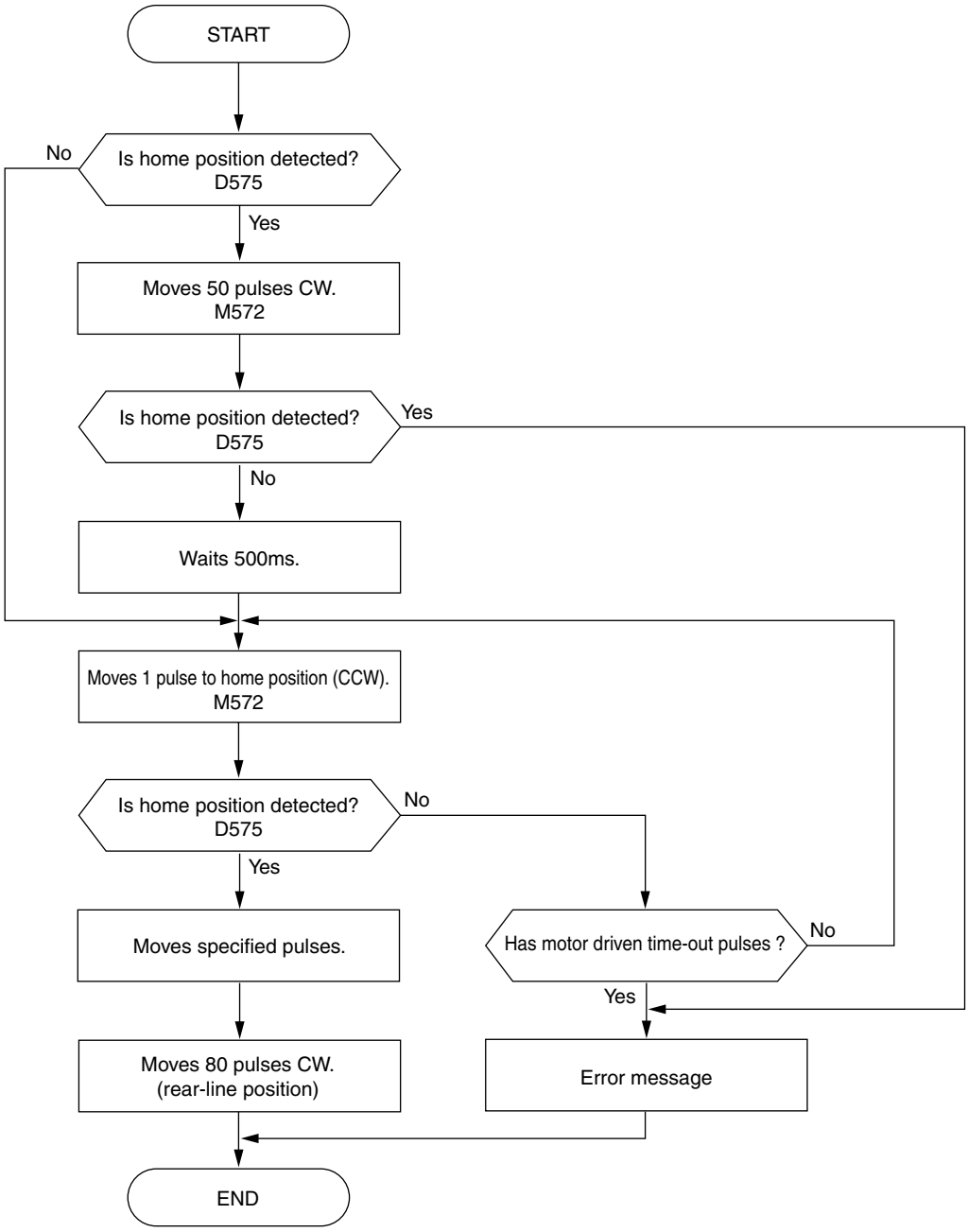
② Horizontal initialization

It detects the horizontal home position, then moves to the waiting position.




7. Auto loading

Draws the paper from magazine and sets its leading end to the cutter position.

### 4.3.2 Shut-down Process

At the system shut-down, the paper is rewound if it remains in the printer.

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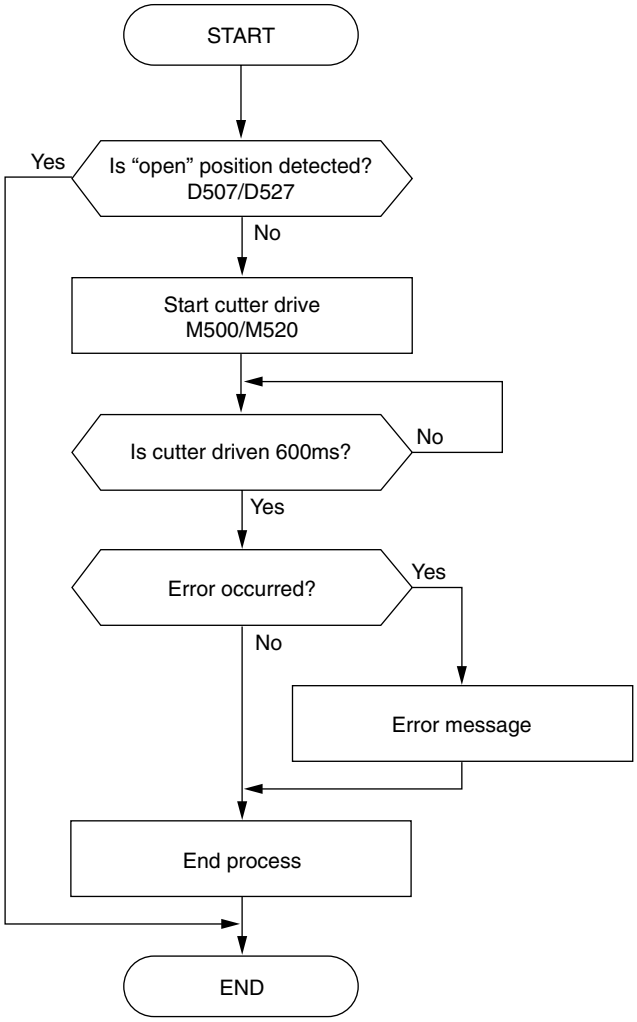
### 4.3.3 Cutter Sequence

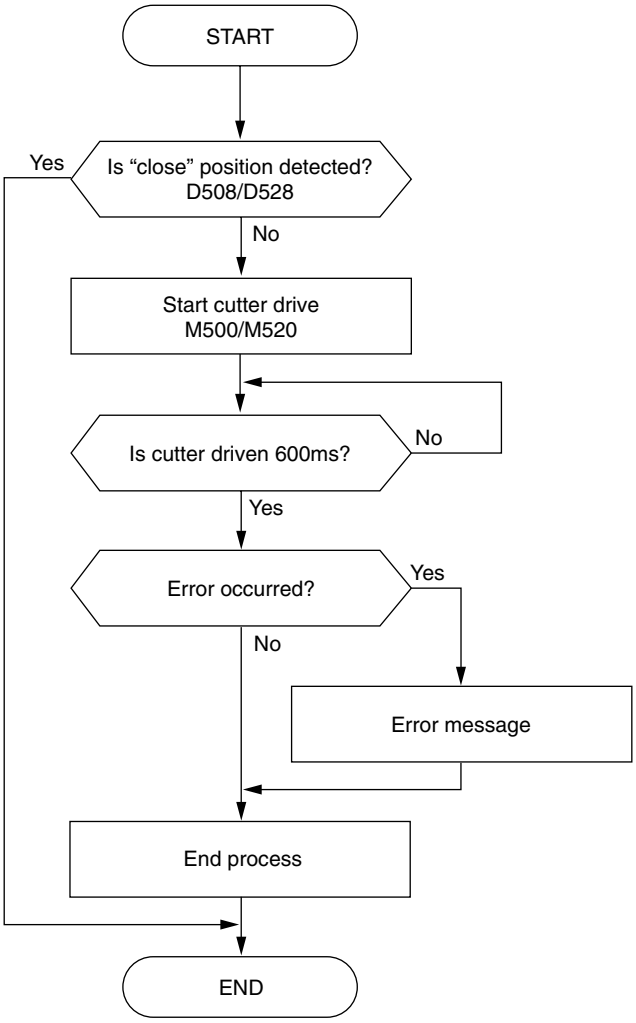
1. Sets the cutter to the open (home) position.

   The cutter blades move to the open (home) position.




2. Sets the cutter to the close position.

   The cutter blades move to the close position.



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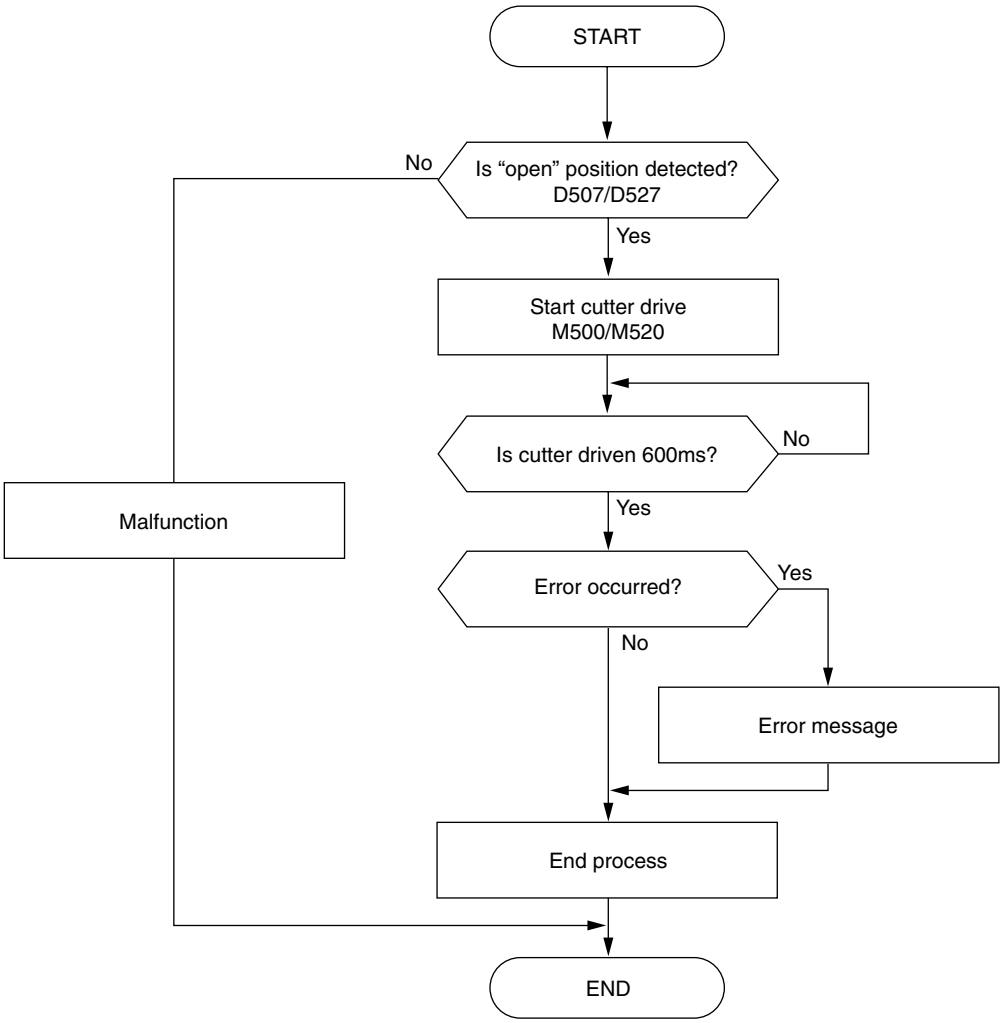
3. Cut

The cutter blades are moved to “open”, “close” and “open” position in that order with the cutter motor drive, and the paper is cut.



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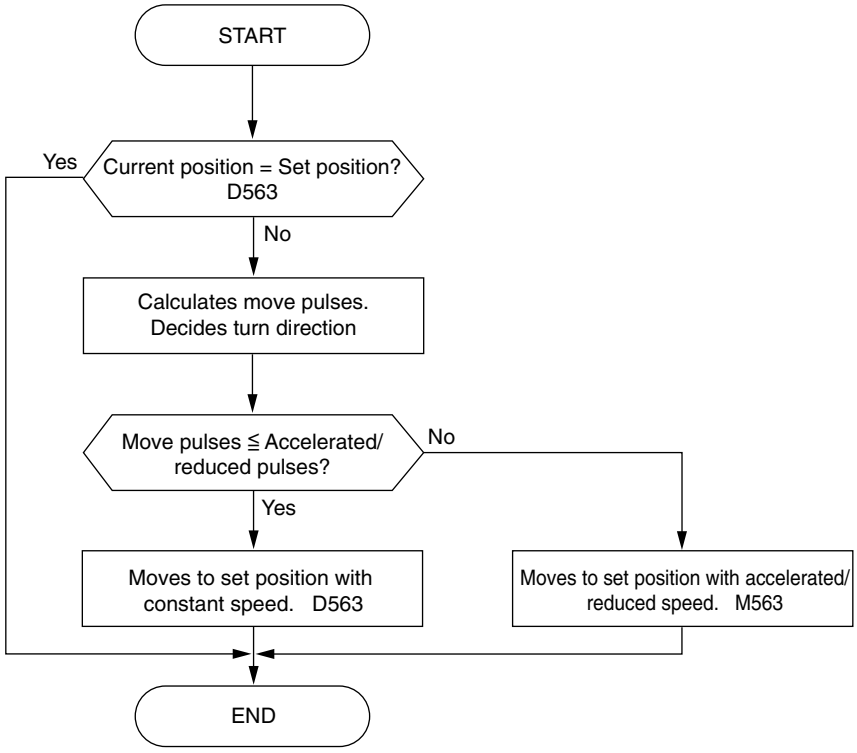
### 4.3.4 Width Guide Position Setting

Sets the exposure section paper guide to the paper width to be used.



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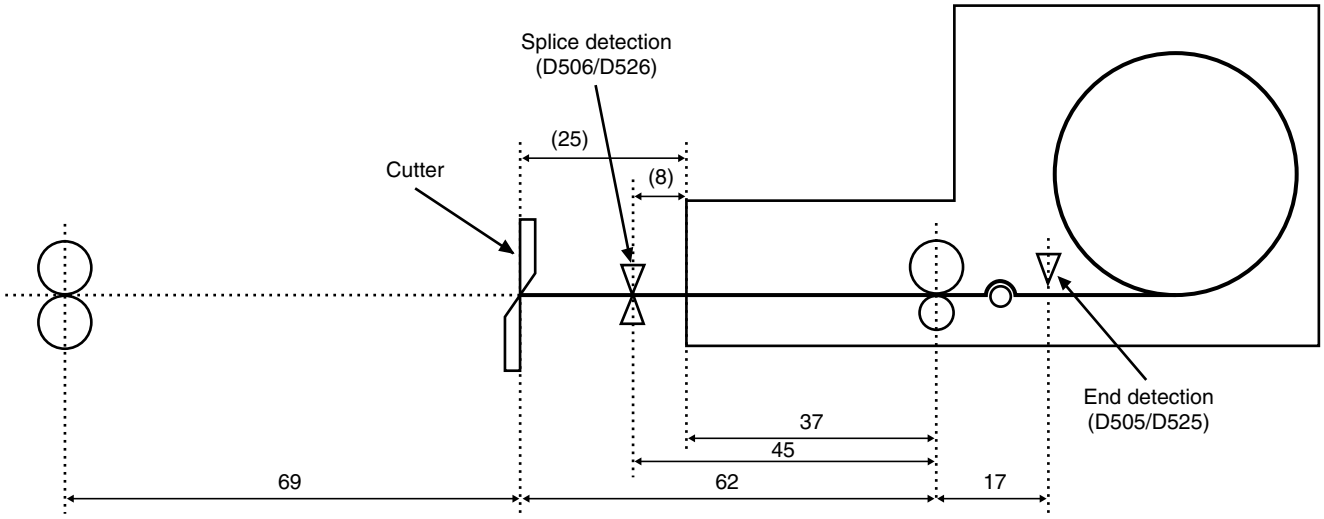
### 4.3.5 Auto Loading

The auto loading draws the paper from the magazine and sets its leading end to the cutter position. It has two steps: drawing and pre-cutting. The paper leading end is fed to the cutter (drawing), then is cut and fed until it reaches the processor entrance (pre-cutting).



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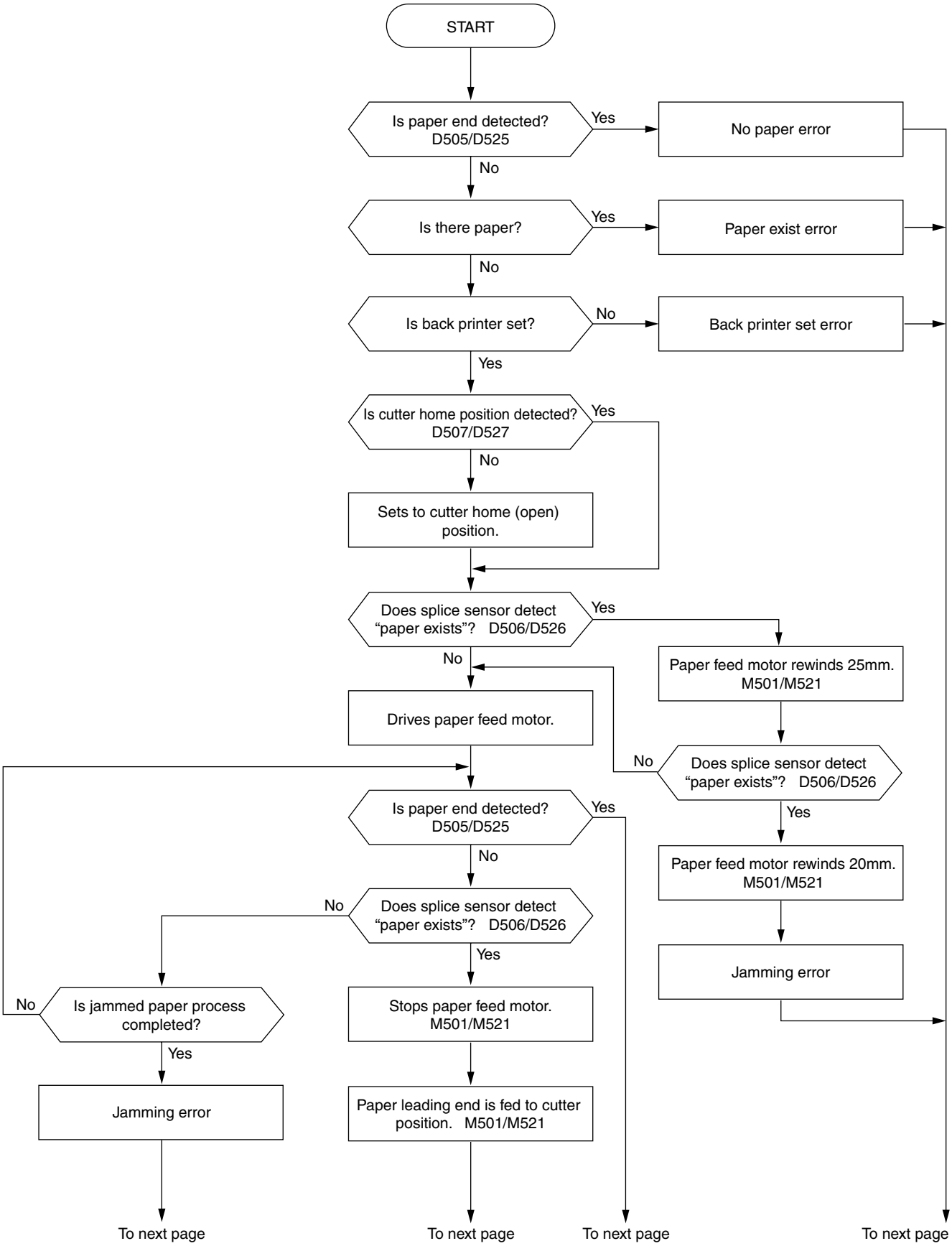
① Drawing



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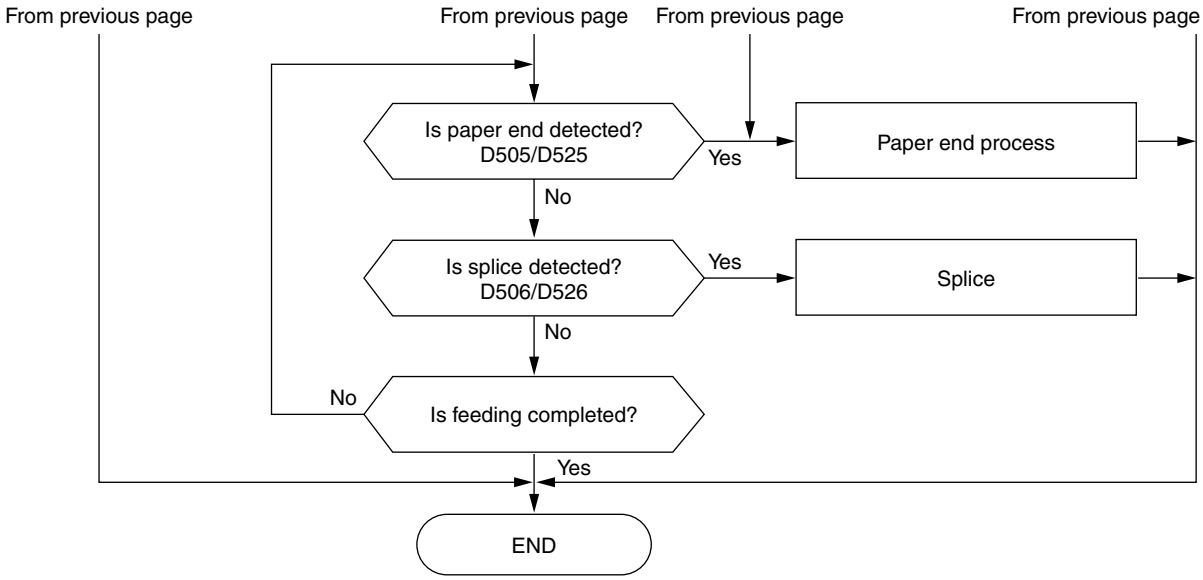
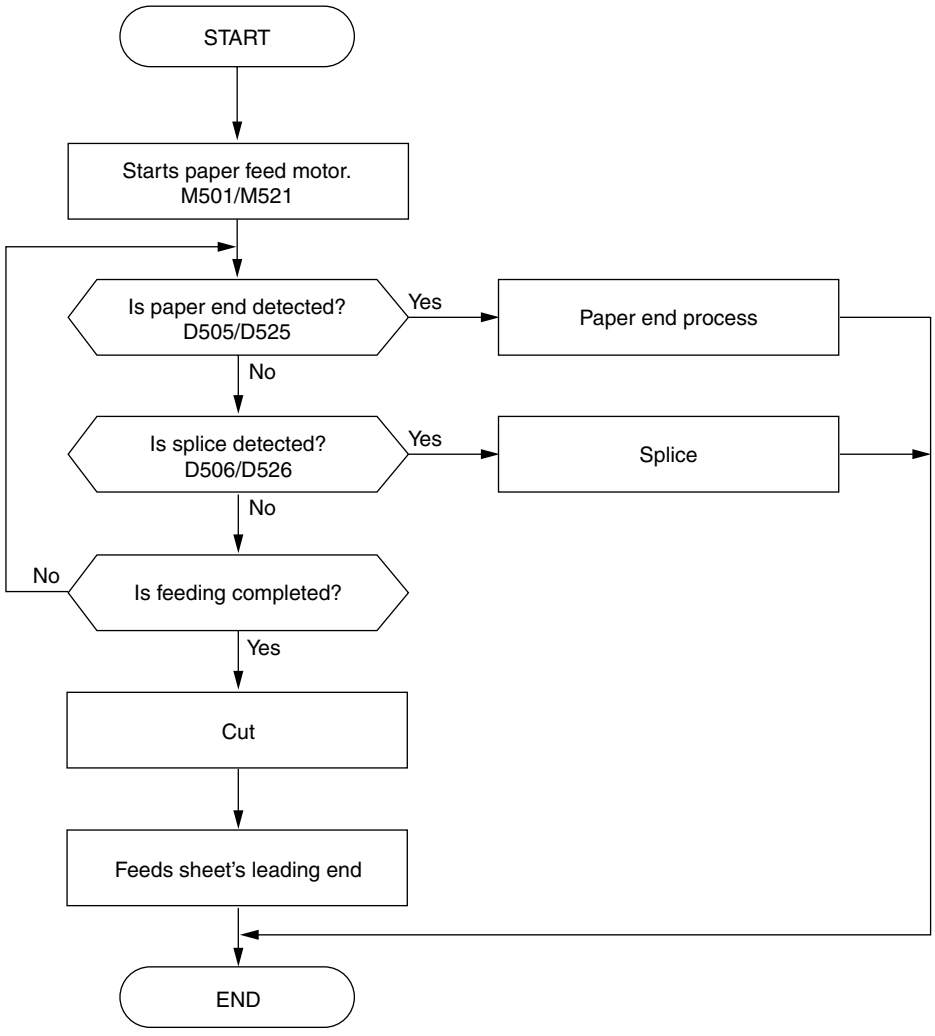



② Pre-cutting



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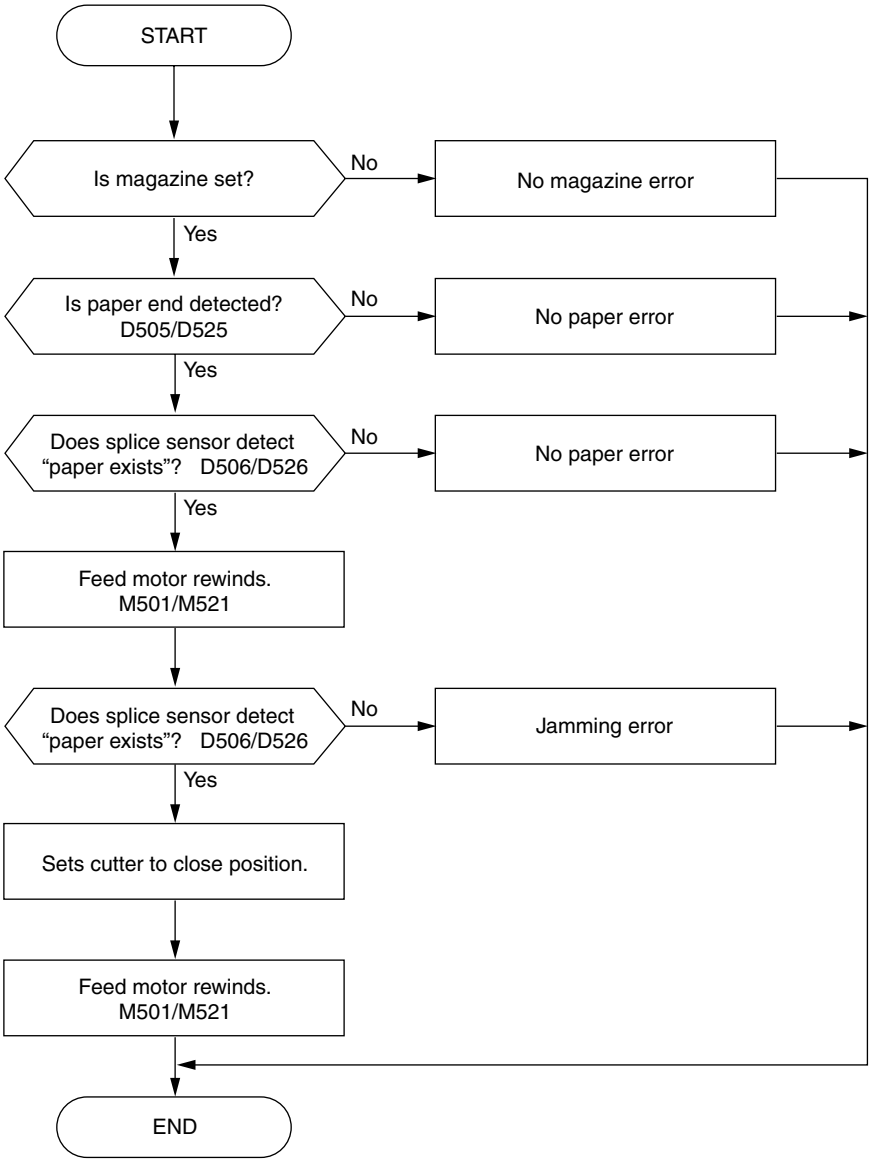
### 4.3.6 Auto Rewinding

Rewinds the unexposed paper from the cutter position into the magazine.



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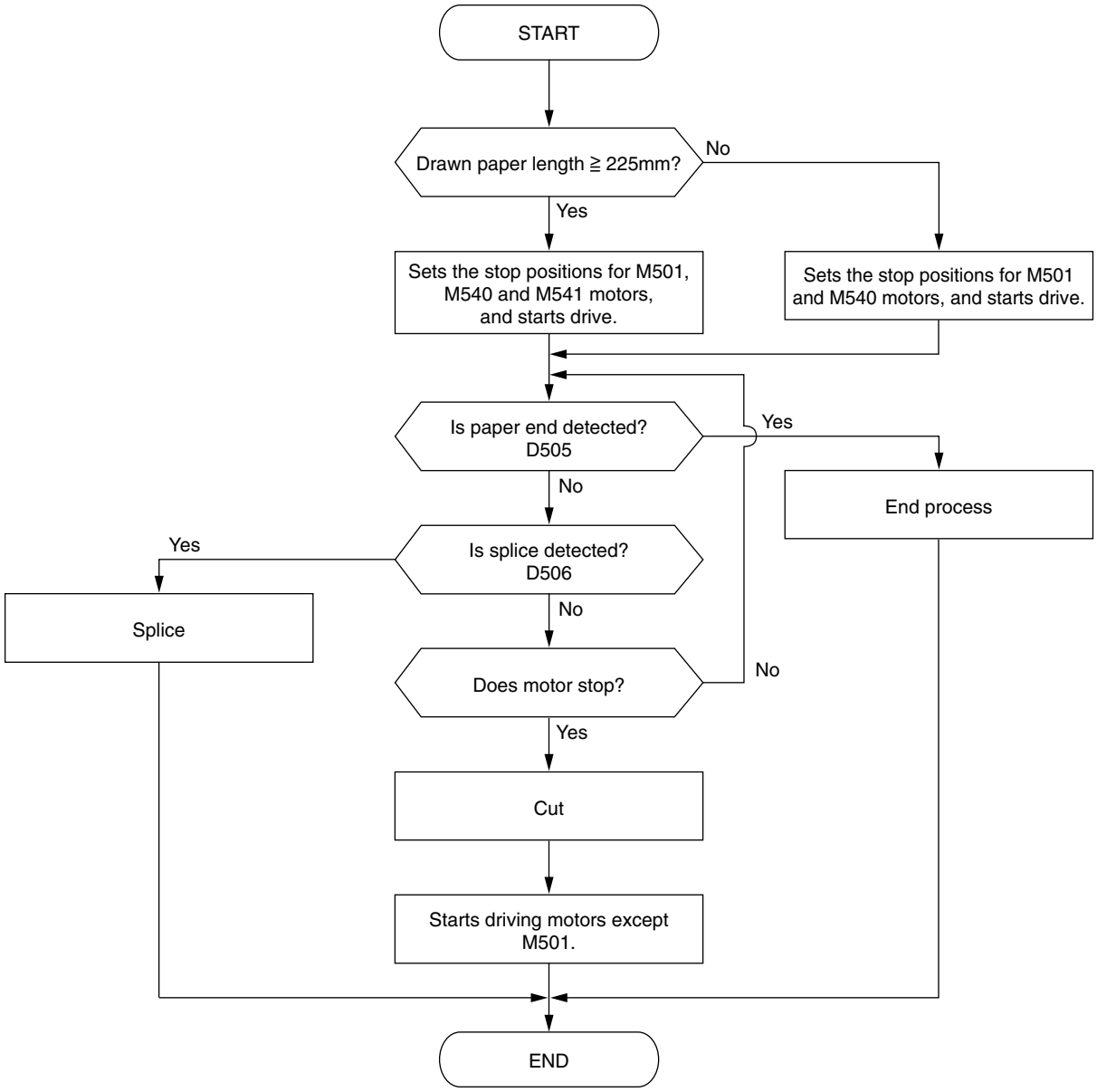
### 4.3.7 Paper Drawing

Draws the paper to the cutter position and cuts its end.

The paper drawing of the upper magazine is as follows:



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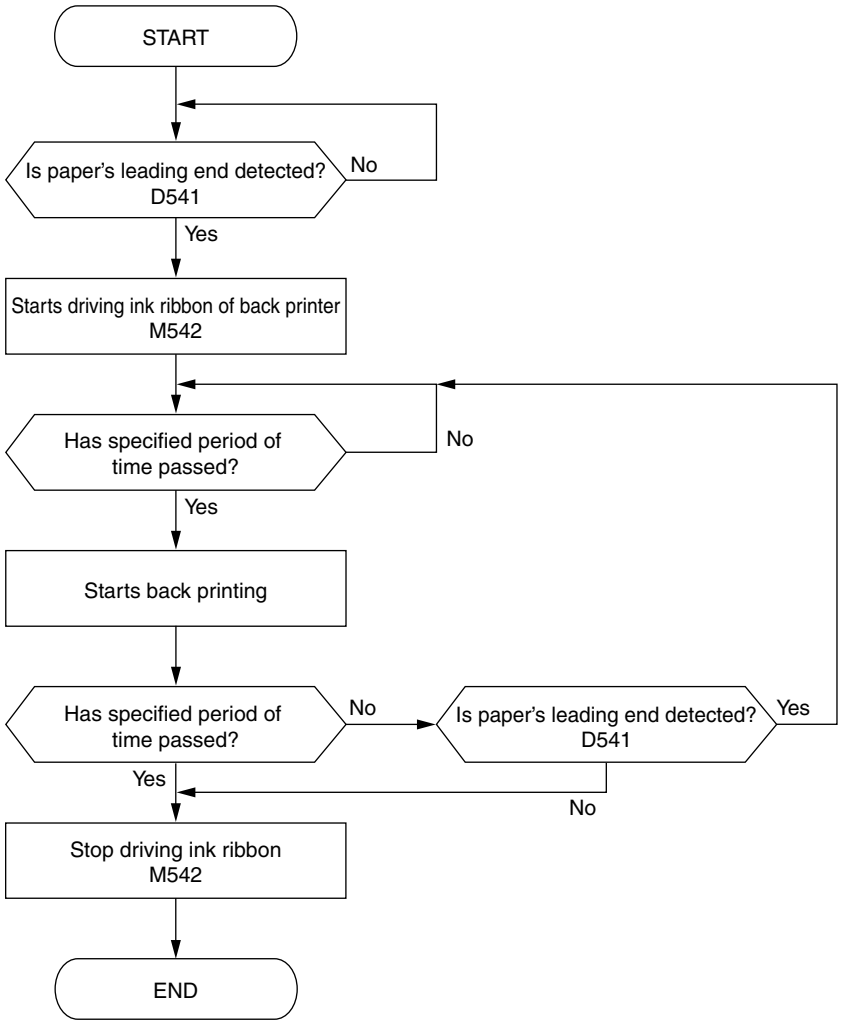
### 4.3.8 Back Printing

Prints on back surface of the paper with the dot-printer.




* In case of the papers with more than 273mm of feed length, the back printing is started within a specified period of time after the paper loading is complete.

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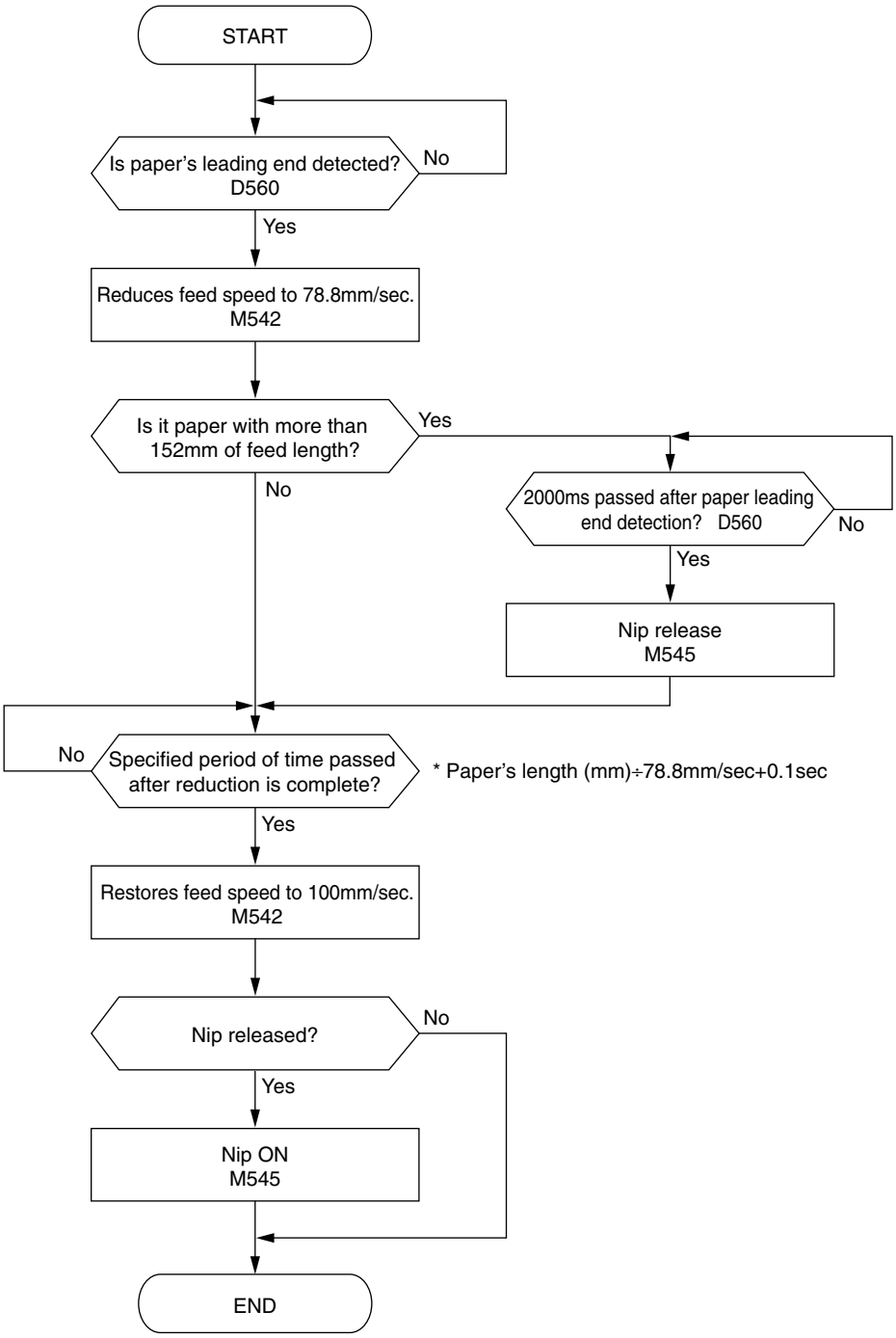
### 4.3.9 Speed Adjustment

The paper is fed to the exposure section, reducing the feed speed from 100mm/sec to 78.8mm/sec.



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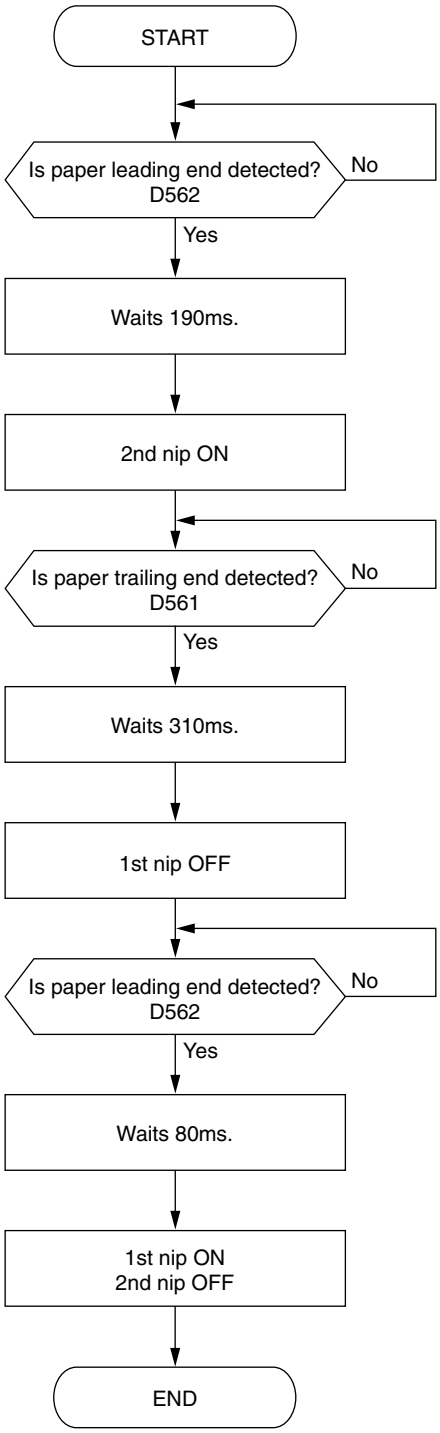
### 4.3.10 Soft Nip

Nips the papers passing through the exposure section.



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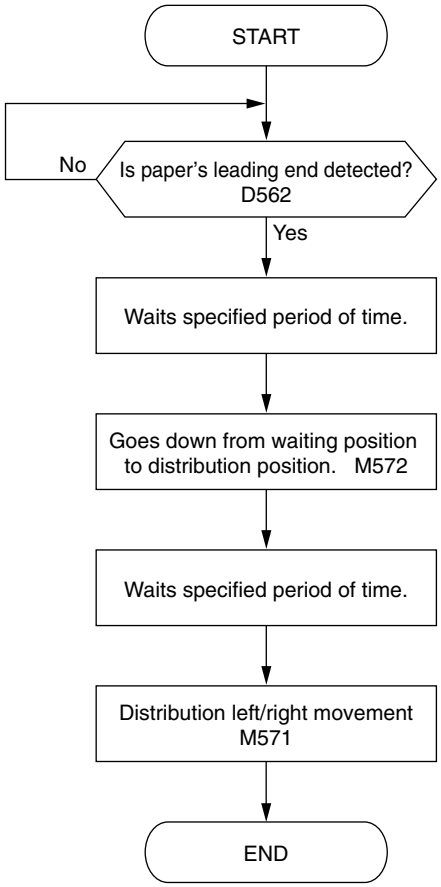
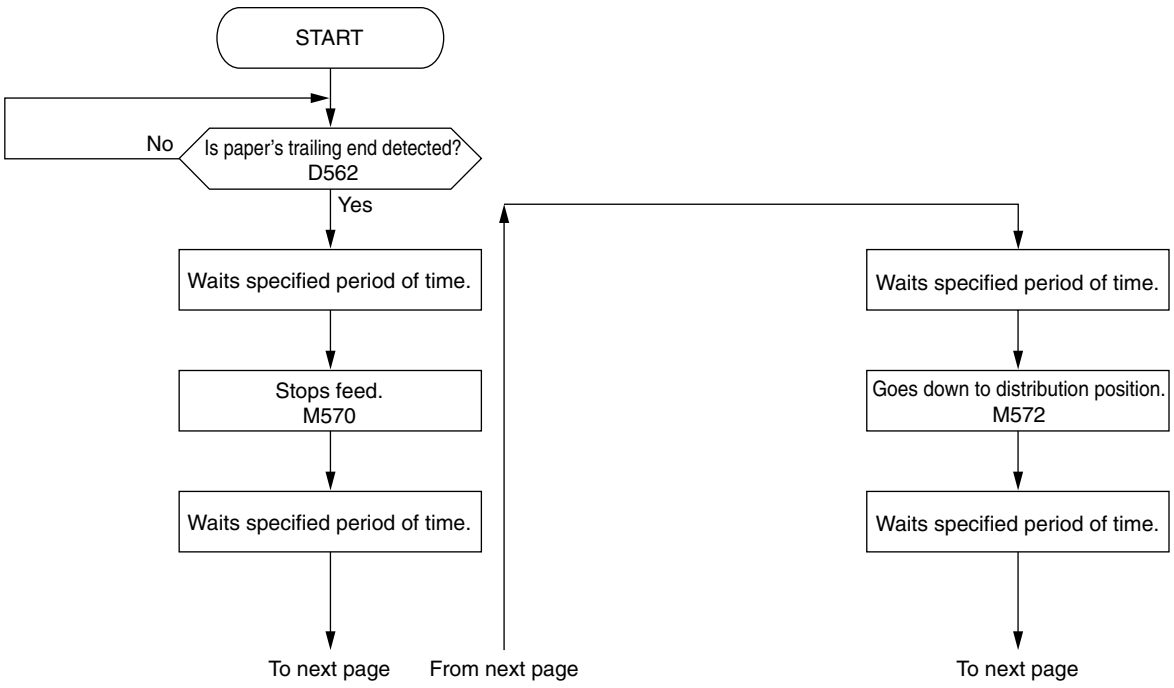
### 4.3.11 Distribution

Distributes the papers.

① Sheet's leading end detection




② Sheet's trailing end detection



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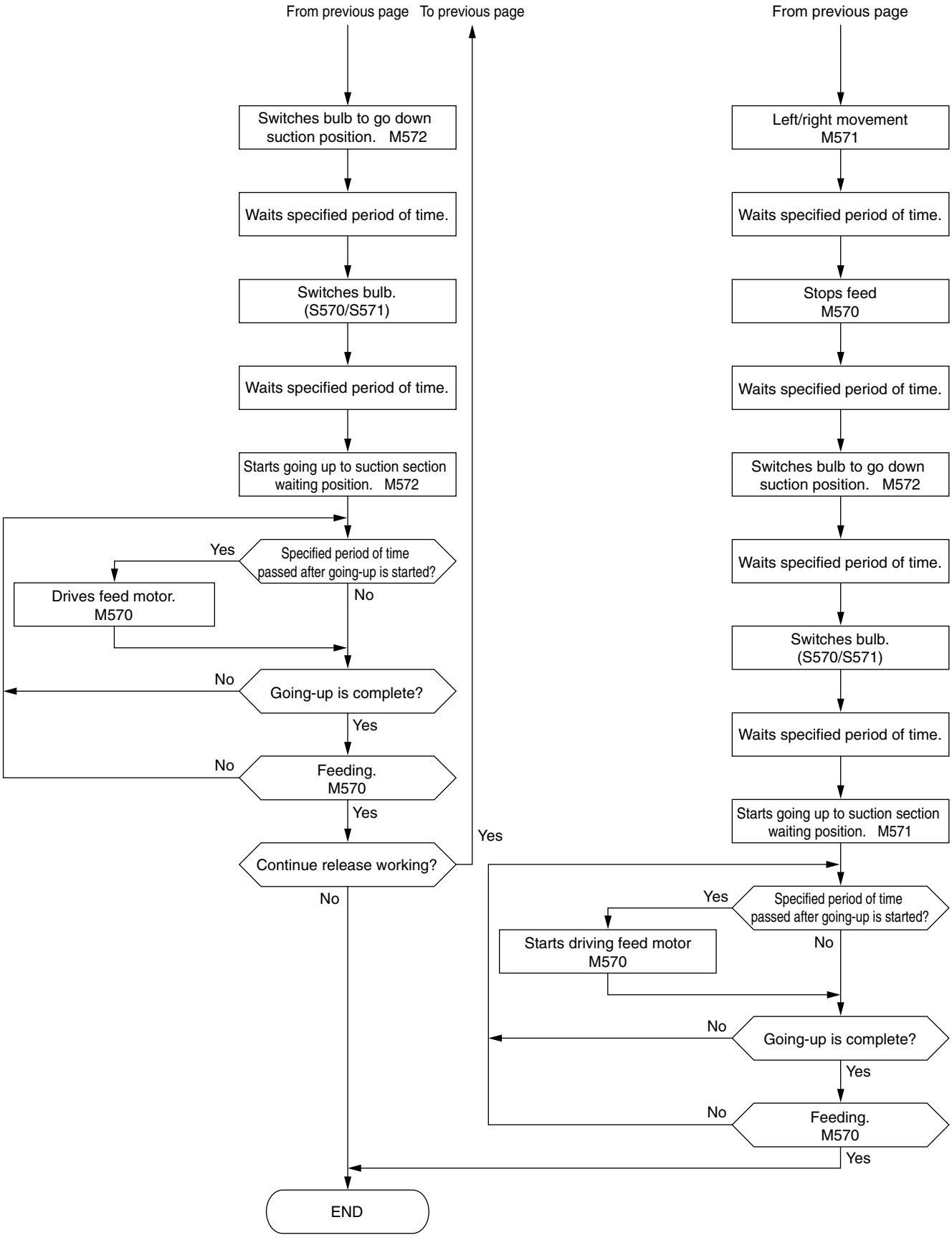

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### ◎ Distribution Line and Position

• Line
The following 5 distribution line types are used differently depending on the sheet's width and length.

① Single line
Sheet is not distributed.
Condition: L > 254mm or W > 152mm

② 2-line high speed distribution
Absorption and release are performed alternately on the 2 lines (2nd low).
Condition: L <= 102mm and 102mm <= W <= 152mm

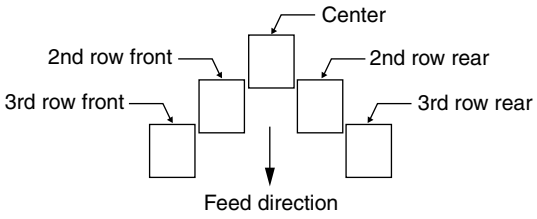
③ 2-line low speed distribution
Release is performed after absorption and distribution.
Condition: 102mm < L and 102mm <= W <= 152mm

④ 2-line special distribution
2-line high speed distribution. Absorption and release are performed alternately on the 2 lines (3rd low).
Condition: L <= 152mm and W = 102mm

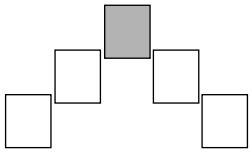
⑤ 3-line distribution
Condition: 82.5mm <= L <= 254mm and W <= 89mm

### ◎ Distribution Position

• Distribution position: 3-line front, 2-line front, center, 2-line rear and 3-line rear.
Relation between distribution lines and positions is as follows:

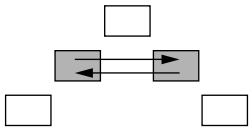



• Single line



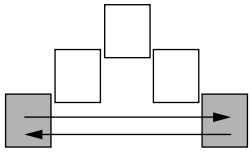
The sheets are placed on the center line position.

• 2-line high speed
• 2-line low speed



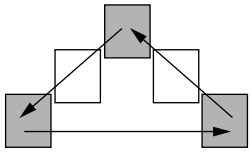
The sheets are distributed on the 2nd row front and 2nd row rear positions alternately.

• 2-line special



The sheets are distributed on the 3rd row front and 3rd row rear positions alternately.

• 3-line



The sheets are distributed on the 3rd row front, 3rd row rear and center positions in that order. (If the sheets are distributed in the reverse order, they cannot be aligned). In case of a sheet with a 254 mm length, it is always placed on the front position.

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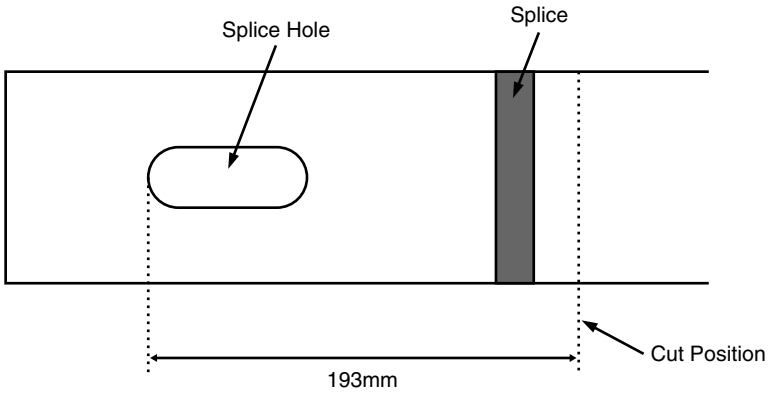
### 4.3.12 Splice

If the splice sensors (D506/D526) detect the splice hole, the paper is cut at 193mm from the leading end of the hole and is output onto the large-size tray.



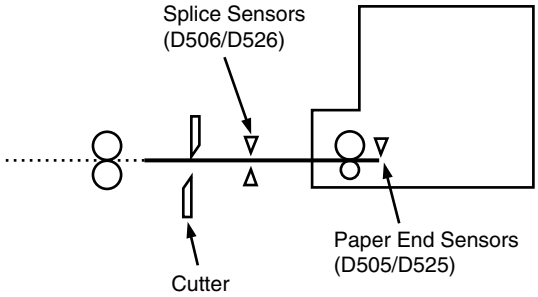

### 4.3.13 Paper End Process

If the paper end sensors (D505/D525) detect the paper end, the trailing paper length is detected by the splice sensors(D506/D526) and paper end sensors (D505/D525), the system performs as follows:



| Trailing paper length | Process |
|---|---|
| Less than 130mm | Stops feeding and displays the paper end processing messages (W-2421/W-2422). |
| More than 130mm | Displays the paper end processing messages (W-2421/W-2422) and draws the trailing paper, then outputs it onto the large-size tray. |

4.3.12
4.3.13



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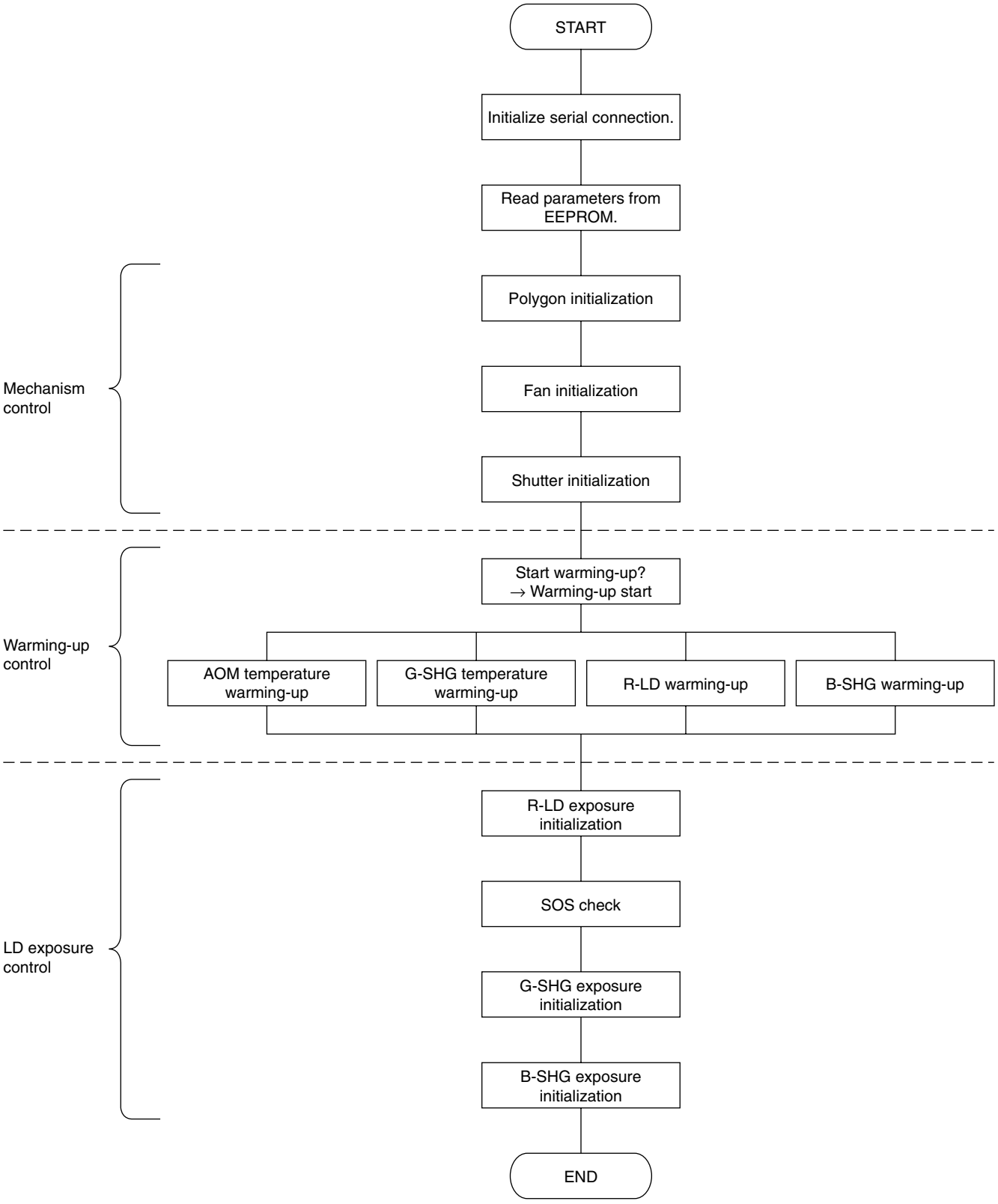
# 4.4 Exposure Section

## 4.4.1 Start-up Initialization

Machine initialization → Warming-up initialization in normal operation



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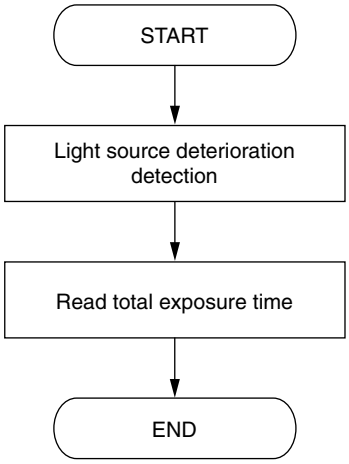
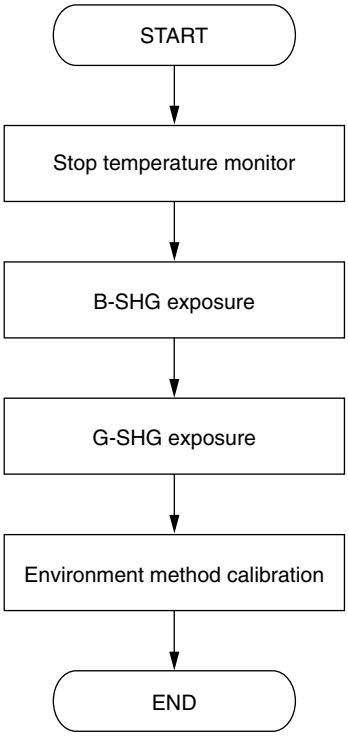
### 4.4.2 End Process




### 4.4.3 Feed Start



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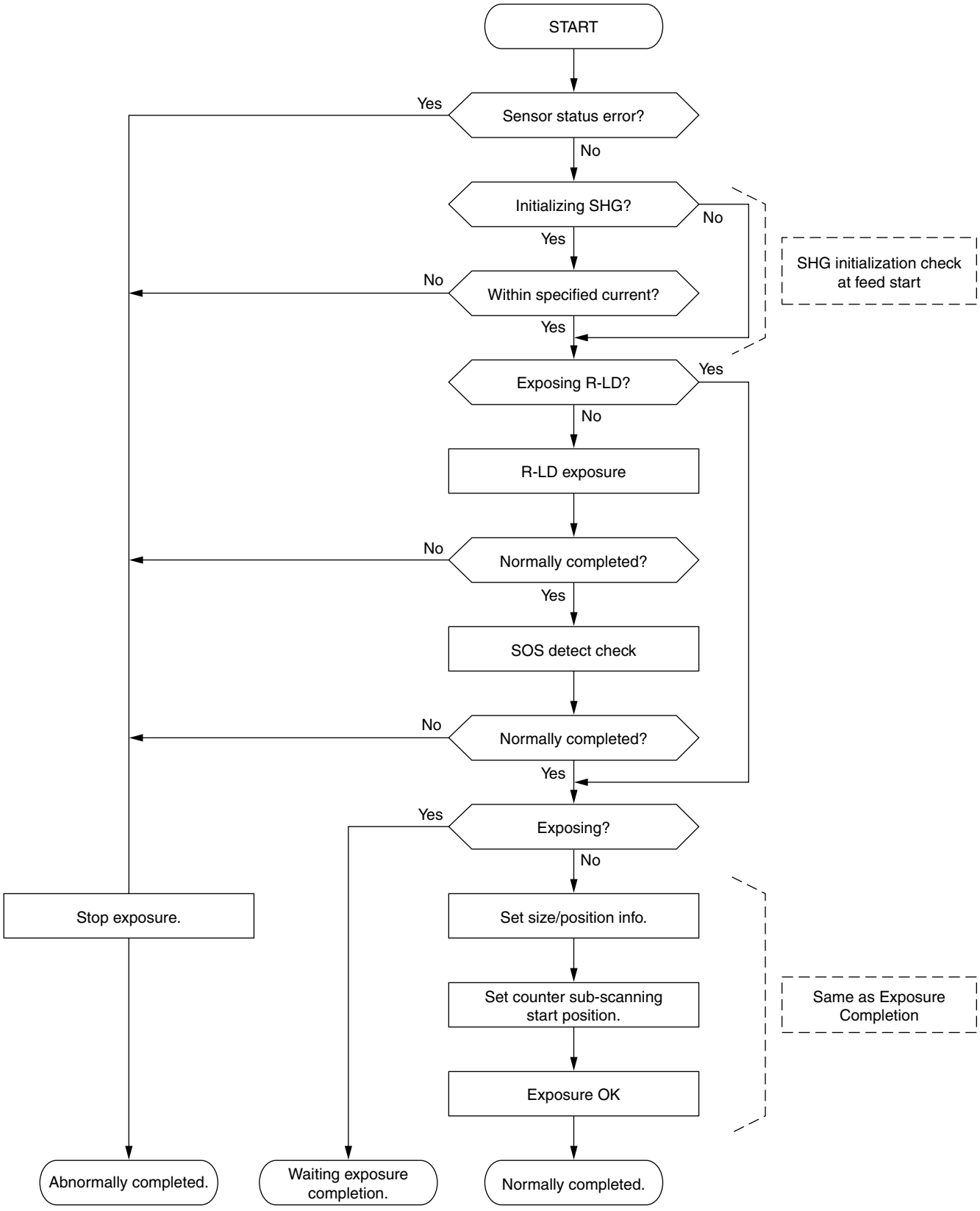
### 4.4.4 Exposure Preparation



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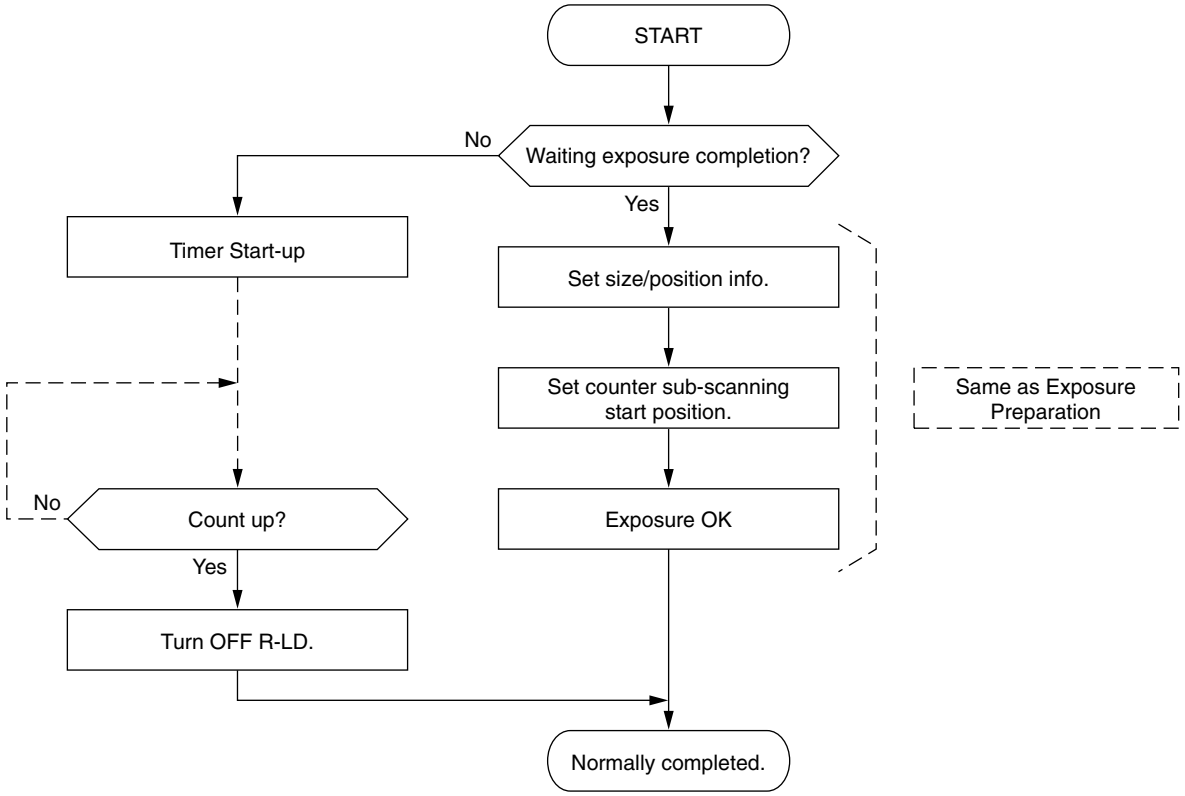
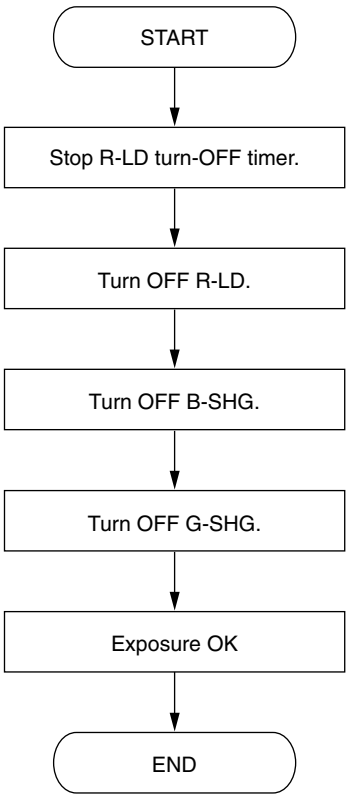
### 4.4.5 Exposure Completion/RLD Exposure Stop






### 4.4.6 Feed Completion

4.4.5
4.4.6



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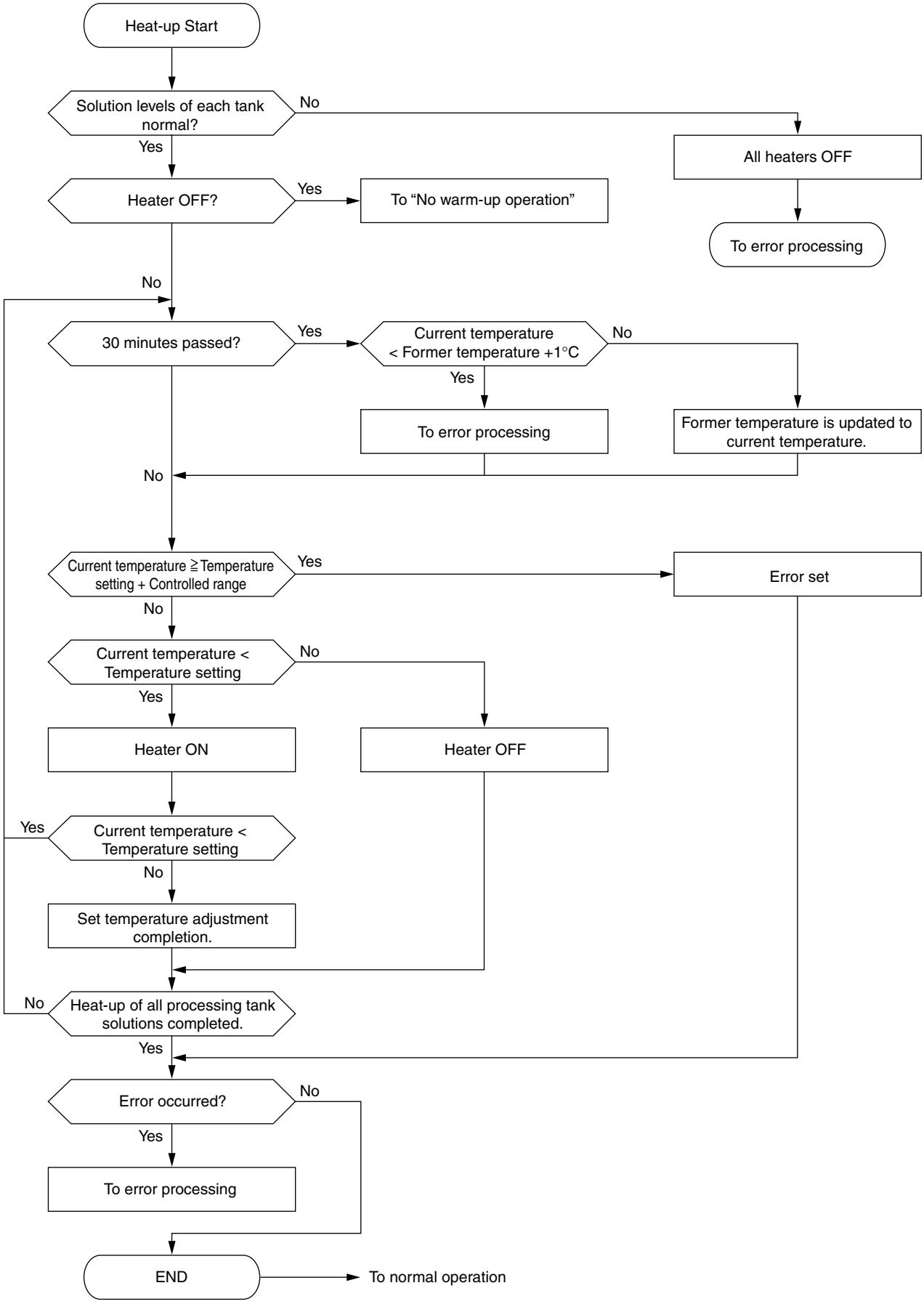
# 4.5 Processor

### 4.5.1 Heat-up Operation



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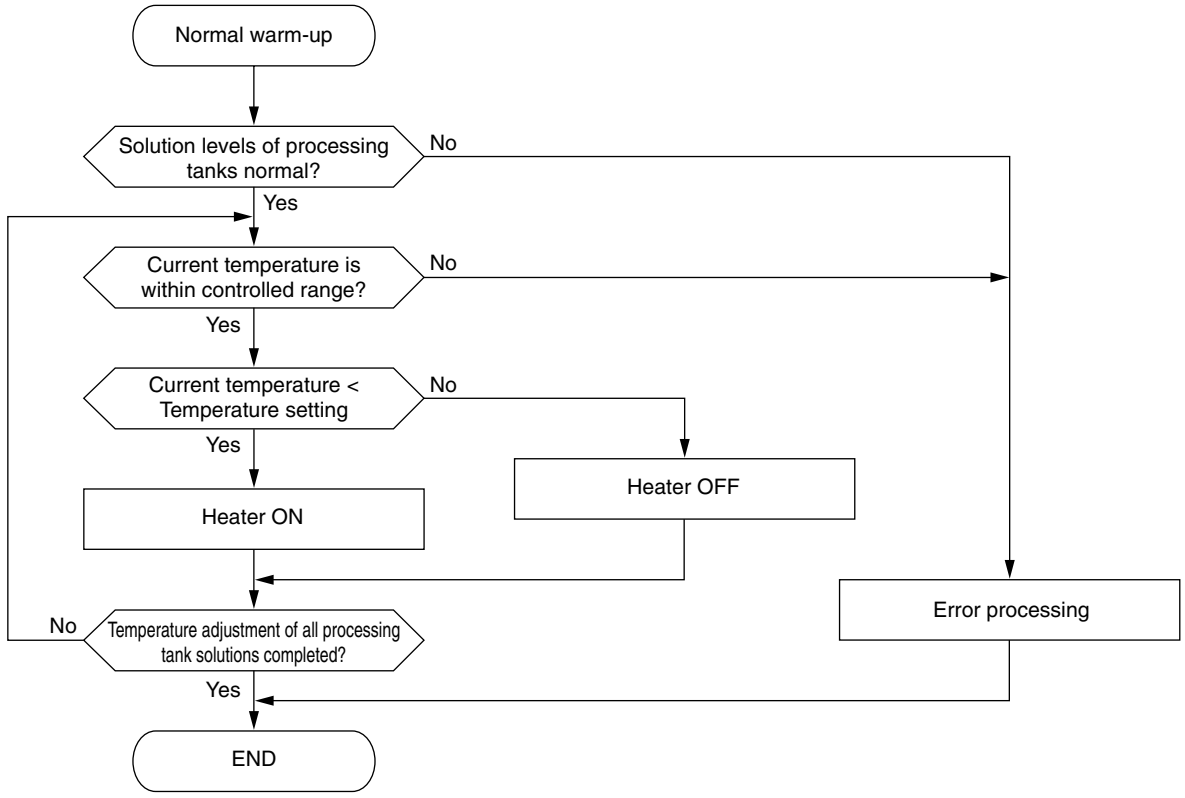
### 4.5.2 Normal Warm-up Operation



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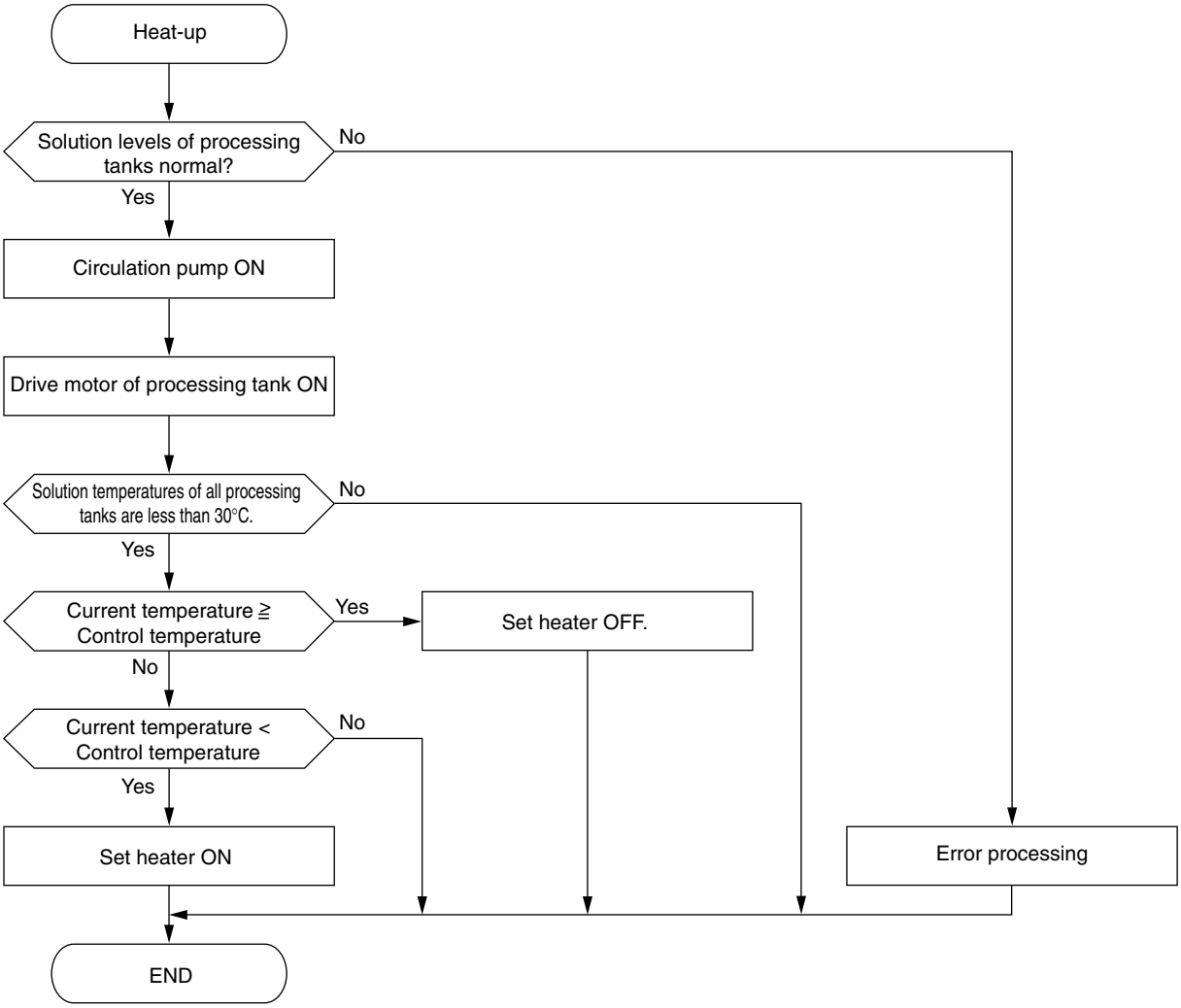
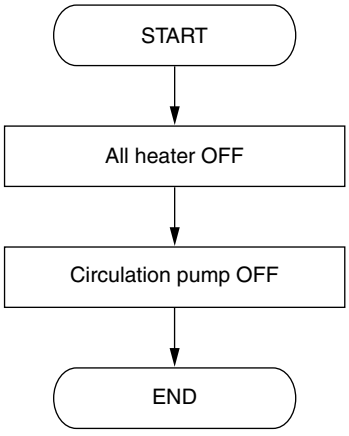
### 4.5.3 Pre-heat Operation

The pre-heat operation is designed to keep each solution temperature above a prescribed level when it might otherwise fall below freezing point. The pre-heat operation time can be set twice in units of less than two hours between 23:00 and 4:00.




### 4.5.4 Cool-down Operation

The temperature control of the processing tanks is stopped when the power or heater is turned OFF.



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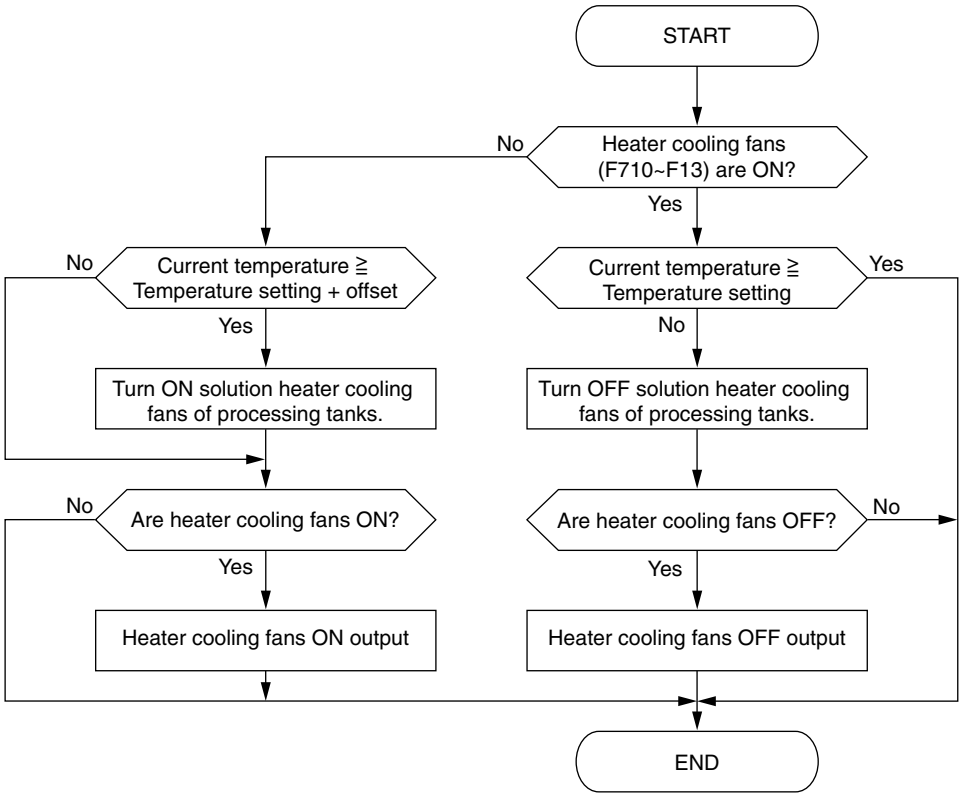
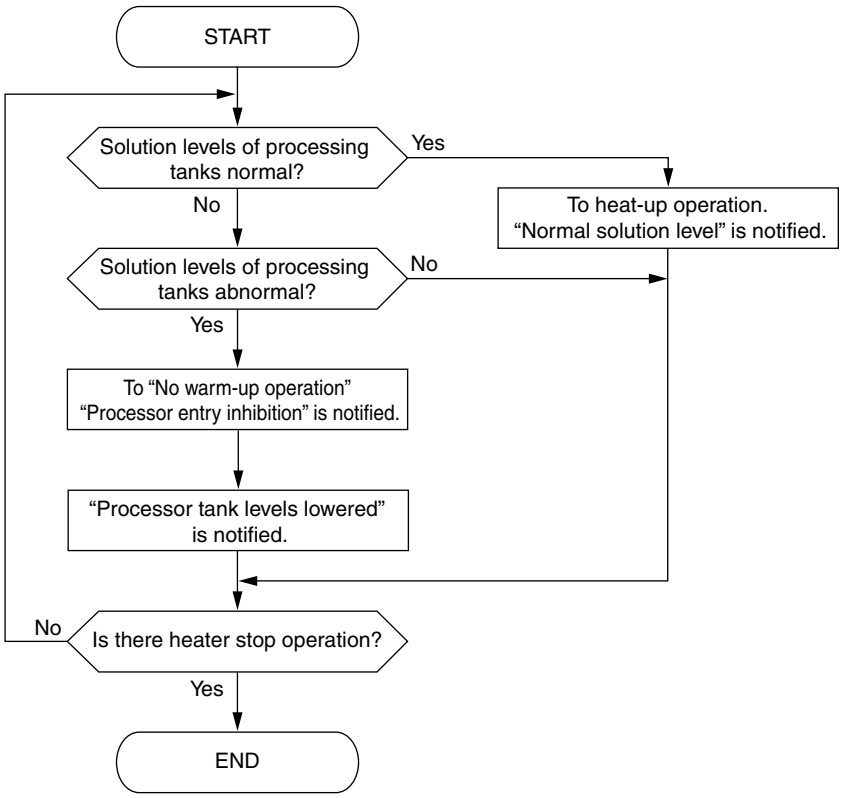
### 4.5.5 Heater Cooling Fan




### 4.5.6 Monitoring Processing Solution Level



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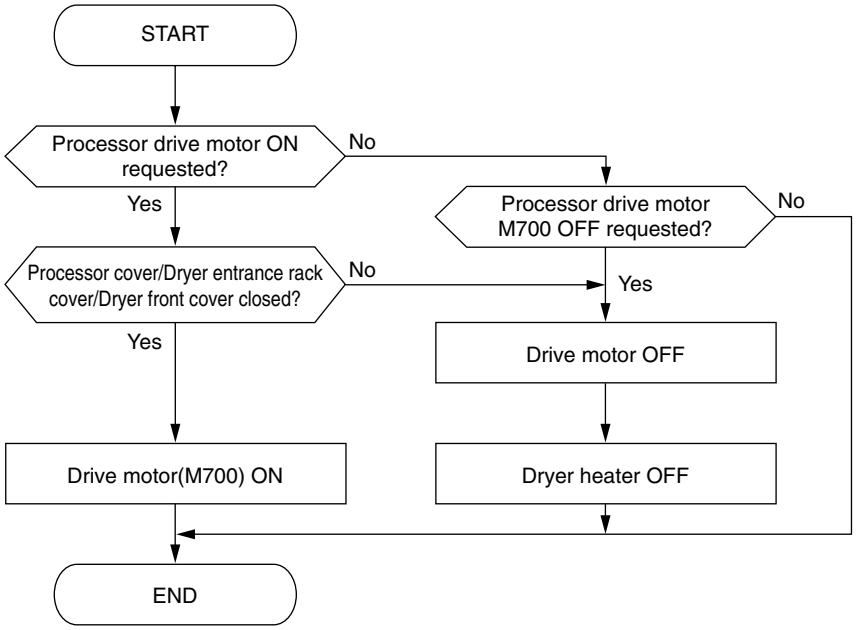
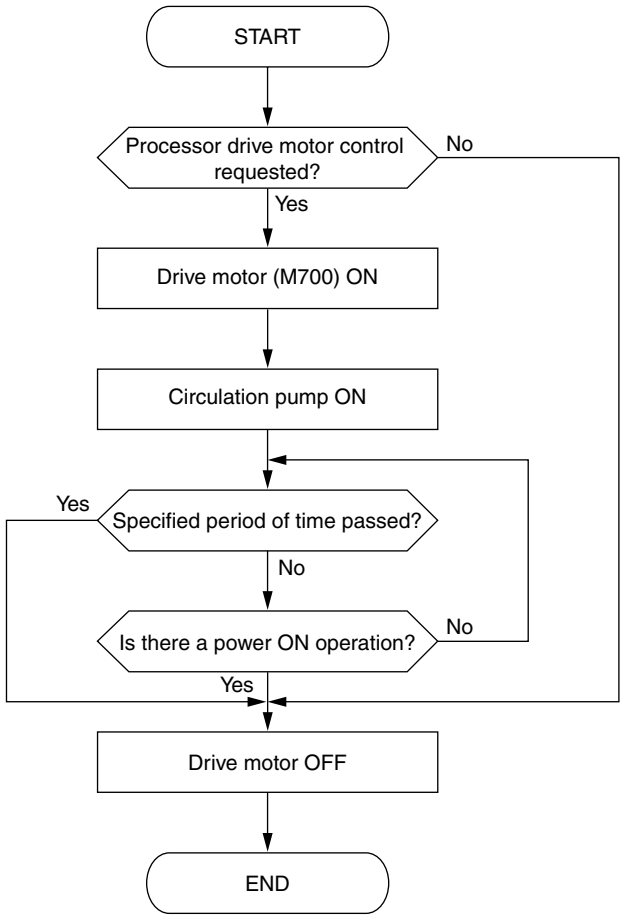
### 4.5.7 Normal Operation Drive Control




### 4.5.8 Auto Intermittent Operation Control

Turns ON the drive motor(M700) to operate the circulation pump during the specified time, so that dust cannot collect on the processing rack rollers.



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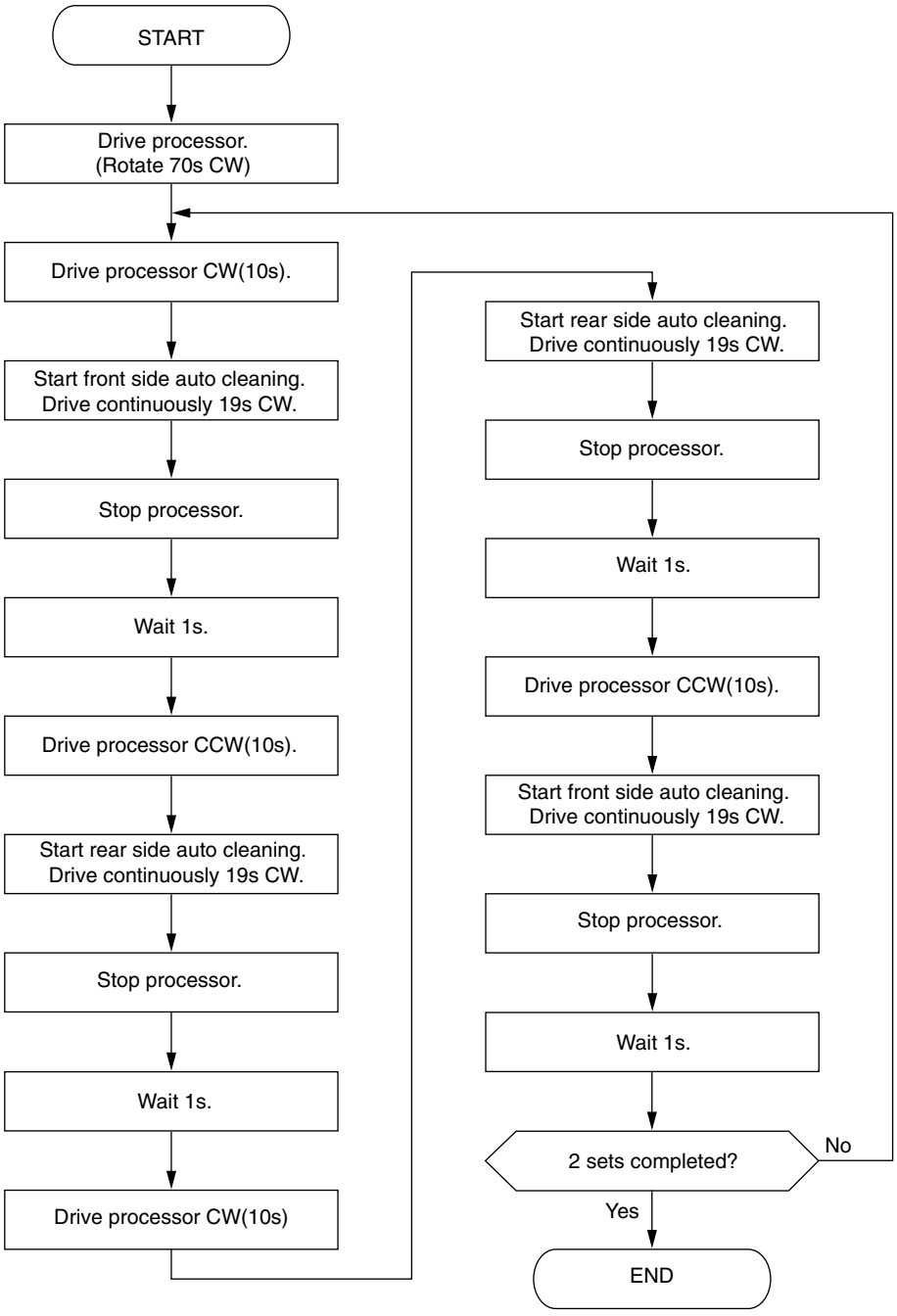
### 4.5.9 Auto Cleaning Control

Supply the PS-R replenisher solution to perform the auto cleaning of the processing racks during the post-operational check.



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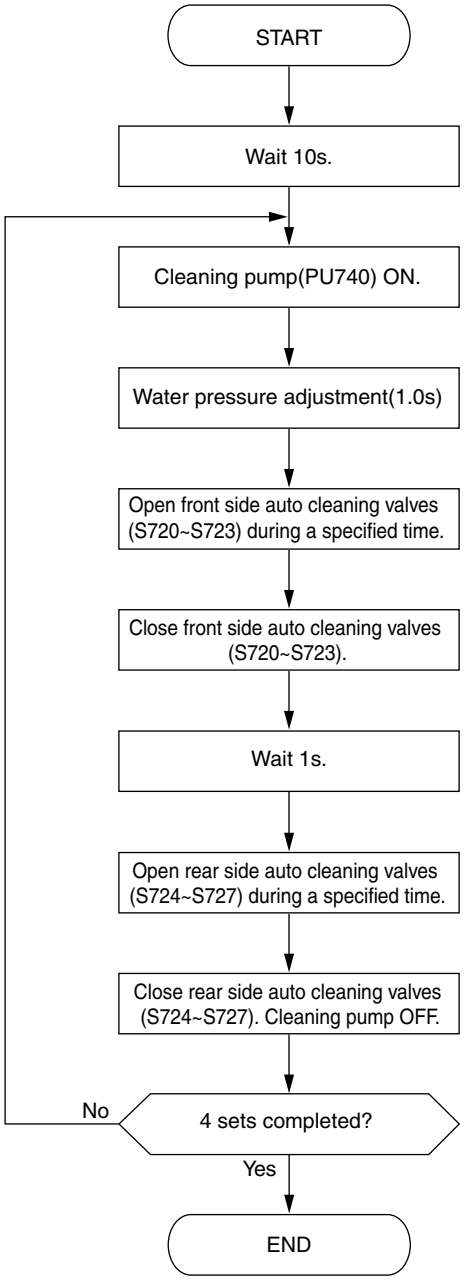
### 4.5.10 Auto Cleaning Output Measurement


START
Wait 10s.
Cleaning pump(PU740) ON.
Water pressure adjustment(1.0s)
Open front side auto cleaning valves (S720~S723) during a specified time.
Close front side auto cleaning valves (S720~S723).
Wait 1s.
Open rear side auto cleaning valves (S724~S727) during a specified time.
Close rear side auto cleaning valves (S724~S727). Cleaning pump OFF.
No
4 sets completed?
Yes
END

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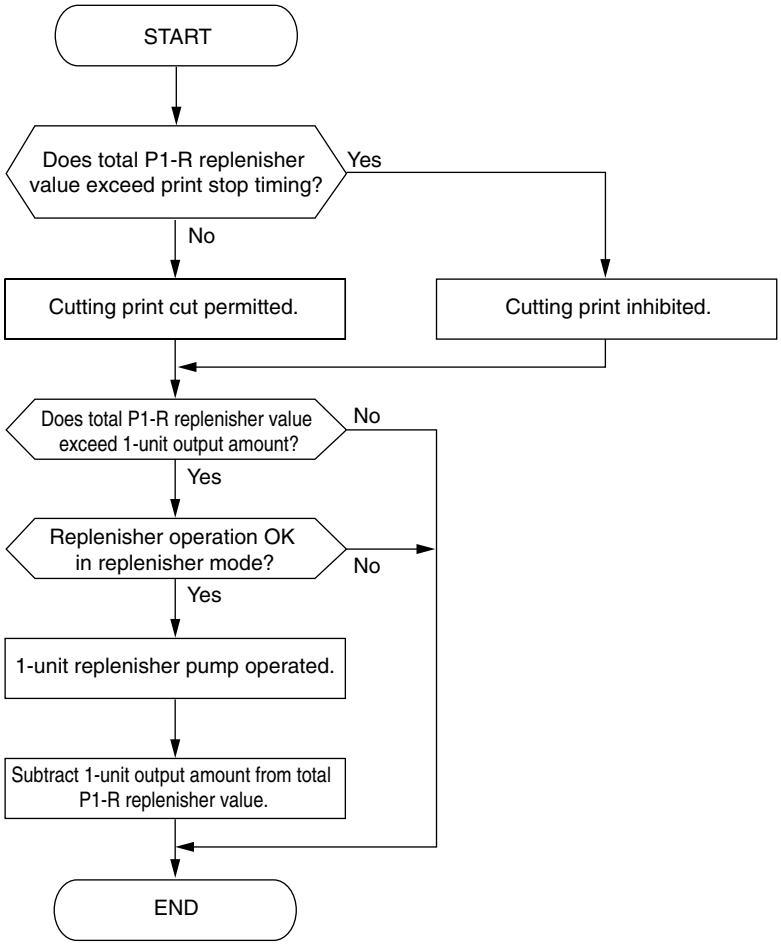
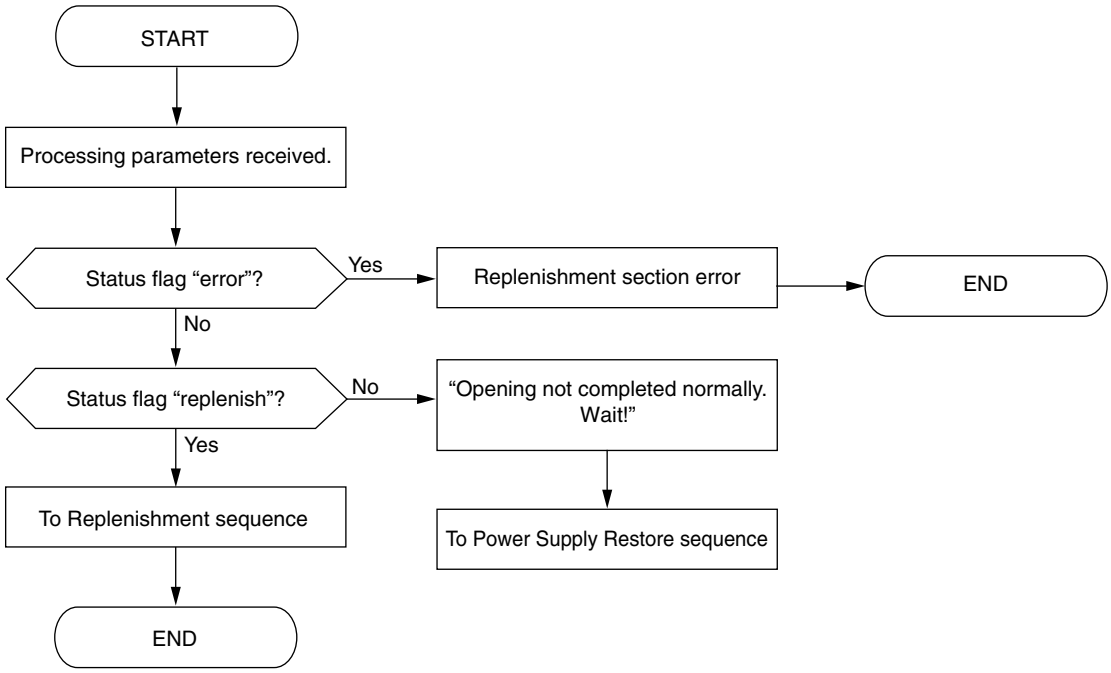
### 4.5.11 Replenishment Pump Control






4.5.11
4.5.12

### 4.5.12 Replenishment Initialization Control



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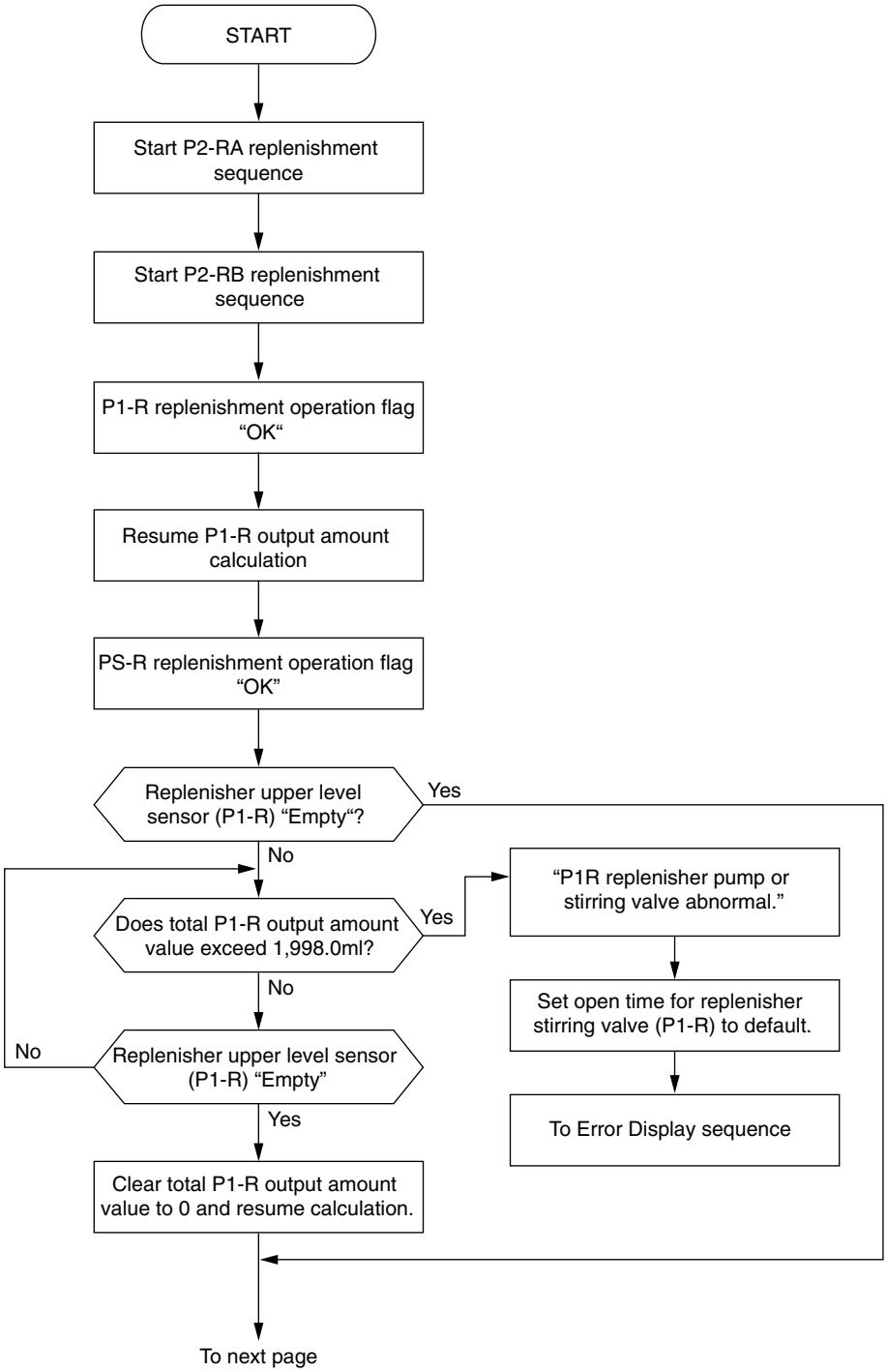
### 4.5.13 P1-R Replenishment Control


START
Start P2-RA replenishment sequence
Start P2-RB replenishment sequence
P1-R replenishment operation flag "OK"
Resume P1-R output amount calculation
PS-R replenishment operation flag "OK"
Replenisher upper level sensor (P1-R) "Empty"?
Yes
No
Does total P1-R output amount value exceed 1,998.0ml?
Yes
No
"P1R replenisher pump or stirring valve abnormal."
Set open time for replenisher stirring valve (P1-R) to default.
To Error Display sequence
No
Replenisher upper level sensor (P1-R) "Empty"
Yes
Clear total P1-R output amount value to 0 and resume calculation.
To next page

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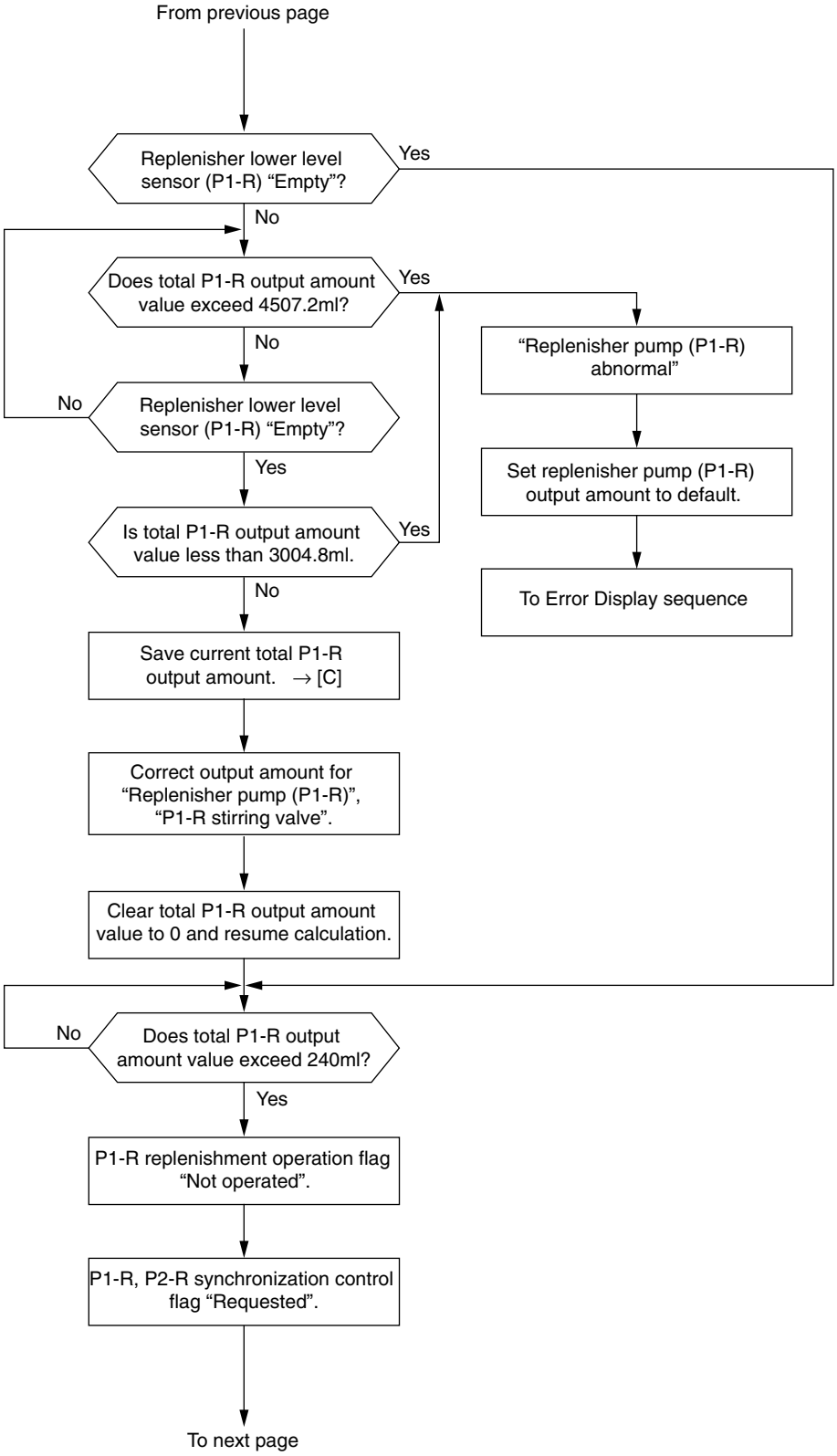
From previous page
Replenisher lower level sensor (P1-R) "Empty"?
Yes
No
Does total P1-R output amount value exceed 4507.2ml?
Yes
No
"Replenisher pump (P1-R) abnormal"
No
Replenisher lower level sensor (P1-R) "Empty"?
Yes
Set replenisher pump (P1-R) output amount to default.
Is total P1-R output amount value less than 3004.8ml.
Yes
No
To Error Display sequence
Save current total P1-R output amount. → [C]
Correct output amount for "Replenisher pump (P1-R)", "P1-R stirring valve".
Clear total P1-R output amount value to 0 and resume calculation.
No
Does total P1-R output amount value exceed 240ml?
Yes
P1-R replenishment operation flag "Not operated".
P1-R, P2-R synchronization control flag "Requested".
To next page

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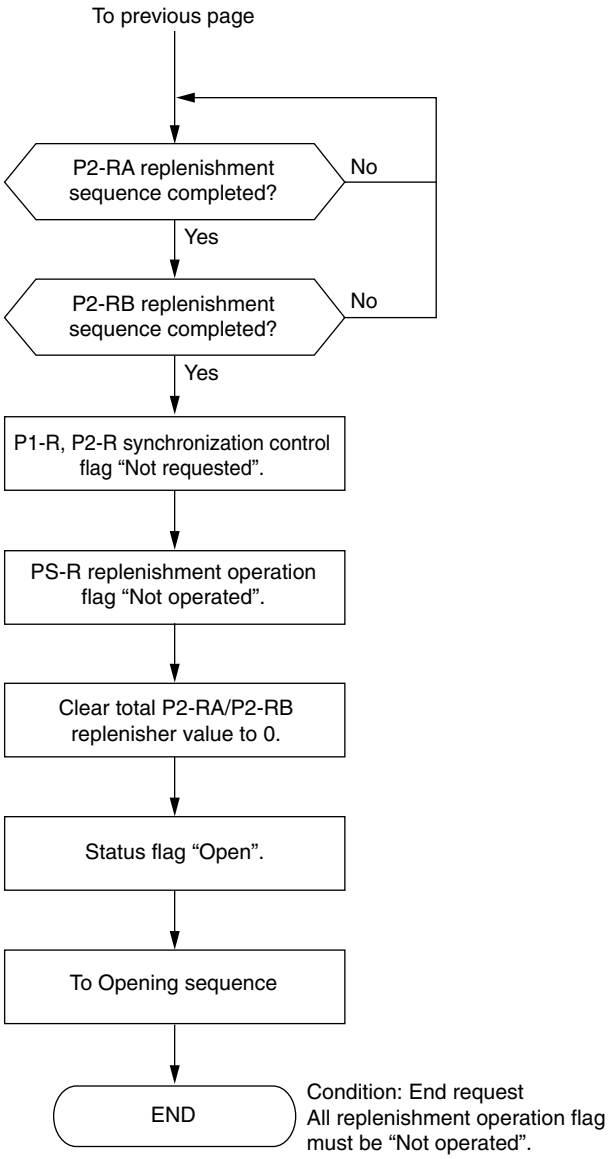
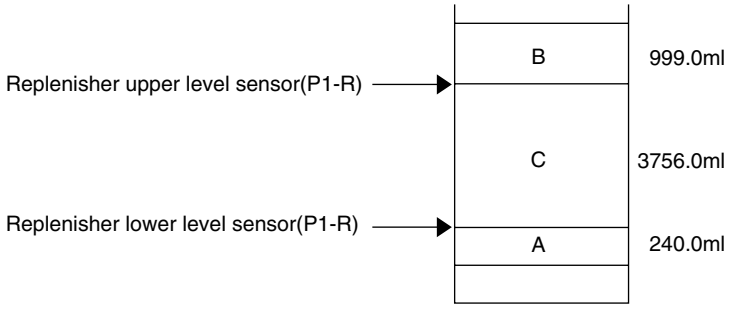





- “Replenisher pump(P1-R)” output amount calculation
  Next 1-unit output amount of replenisher pump(P1-R)
  =Current 1-unit output amount × P1-R replenisher tank capacity[C]/Total P1-R output amount value[C]
  =Current 1-unit output amount × 3756.0ml/Total P1-R output amount value[C]

- “Stirring valve(P1-R)” output amount calculation
  Next replenisher pump stirring valve(P1-R) opening time(fluctuation)
  =Current replenisher pump stirring valve(P1-R) opening time(fluctuation) × P1-R replenisher tank capacity[B]/Total P1-R output amount value[B]
  =Current replenisher pump stirring valve(P1-R) opening time(fluctuation) × 999.0ml/Total P1-R output amount value[B]

*NOTE: In case of “Total P1-R output amount value[B]”=0", set “Stirring valve(P1-R)” output amount to default.*



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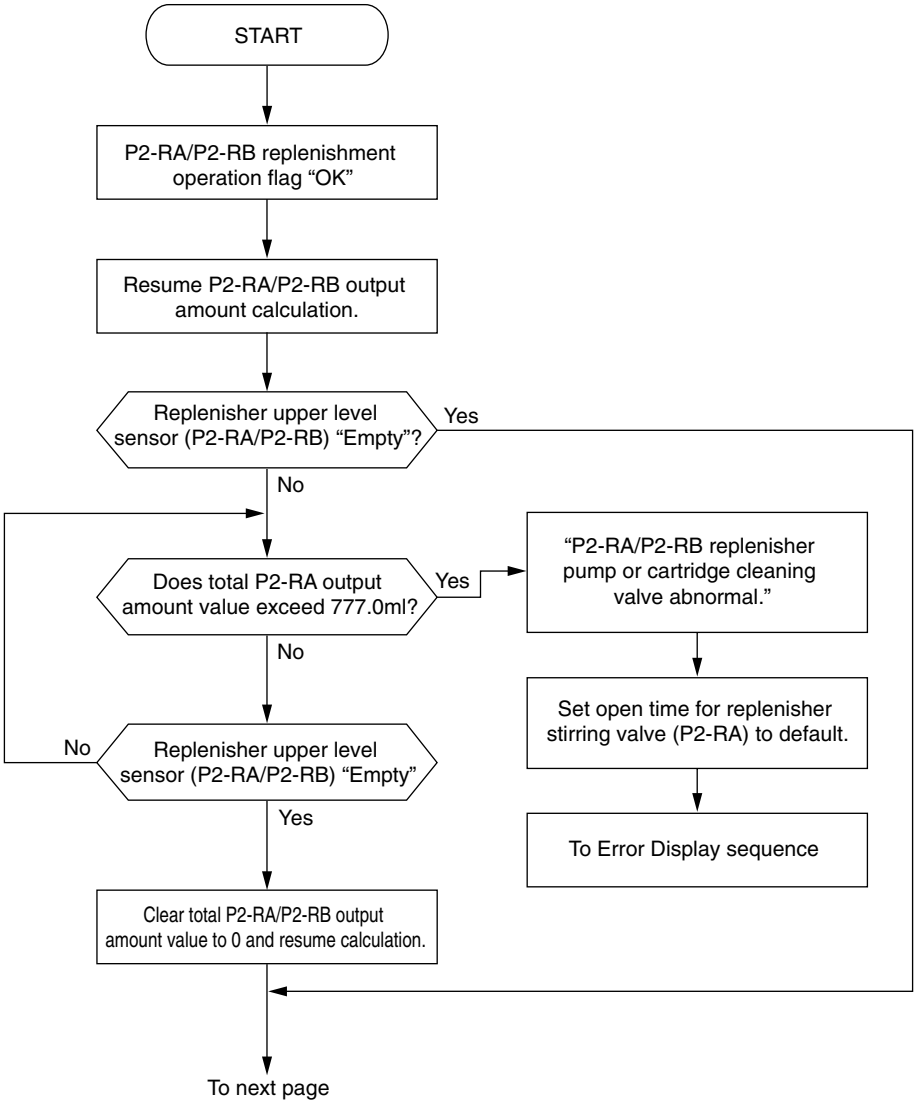
### 4.5.14 P2-RA/P2-RB Replenishment Control


START
P2-RA/P2-RB replenishment operation flag “OK”
Resume P2-RA/P2-RB output amount calculation.
Replenisher upper level sensor (P2-RA/P2-RB) “Empty”?
Yes
No
Does total P2-RA output amount value exceed 777.0ml?
Yes
“P2-RA/P2-RB replenisher pump or cartridge cleaning valve abnormal.”
No
Set open time for replenisher stirring valve (P2-RA) to default.
No
Replenisher upper level sensor (P2-RA/P2-RB) “Empty”
To Error Display sequence
Yes
Clear total P2-RA/P2-RB output amount value to 0 and resume calculation.
To next page

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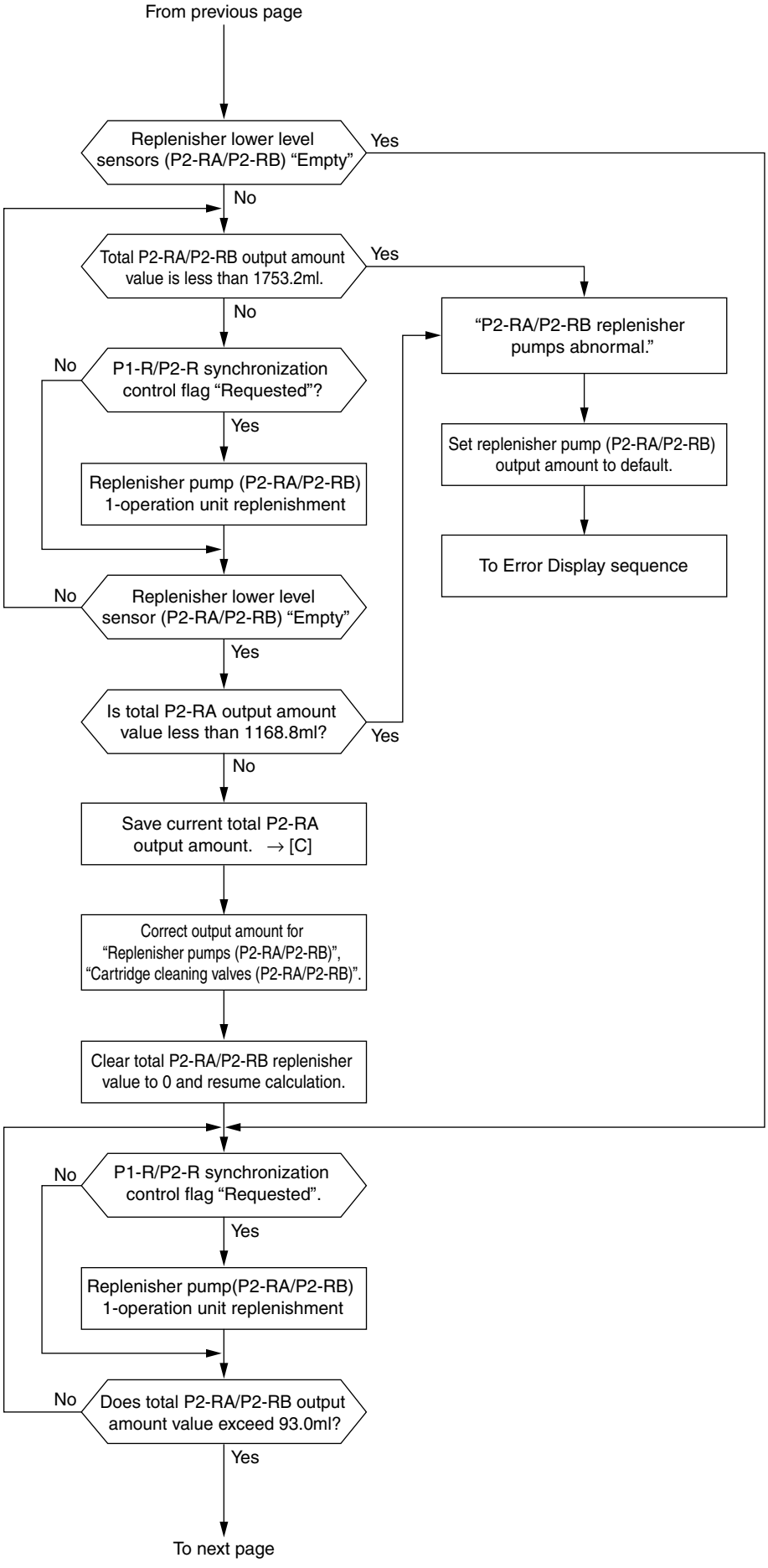
From previous page
Replenisher lower level sensors (P2-RA/P2-RB) "Empty"
Yes
No
Total P2-RA/P2-RB output amount value is less than 1753.2ml.
Yes
No
"P2-RA/P2-RB replenisher pumps abnormal."
No
P1-R/P2-R synchronization control flag "Requested"?
Yes
Set replenisher pump (P2-RA/P2-RB) output amount to default.
Replenisher pump (P2-RA/P2-RB) 1-operation unit replenishment
To Error Display sequence
No
Replenisher lower level sensor (P2-RA/P2-RB) "Empty"
Yes
Is total P2-RA output amount value less than 1168.8ml?
Yes
No
Save current total P2-RA output amount. → [C]
Correct output amount for "Replenisher pumps (P2-RA/P2-RB)", "Cartridge cleaning valves (P2-RA/P2-RB)".
Clear total P2-RA/P2-RB replenisher value to 0 and resume calculation.
No
P1-R/P2-R synchronization control flag "Requested".
Yes
Replenisher pump(P2-RA/P2-RB) 1-operation unit replenishment
No
Does total P2-RA/P2-RB output amount value exceed 93.0ml?
Yes
To next page

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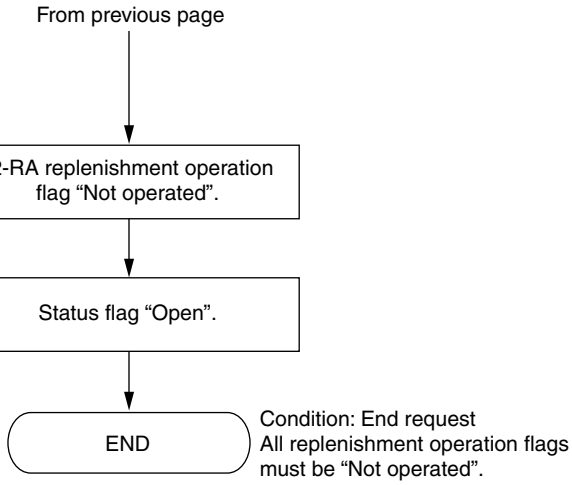
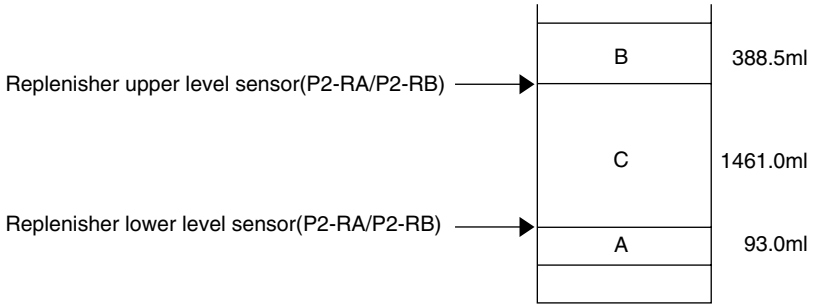

From previous page
P2-RA replenishment operation flag “Not operated”.
Status flag “Open”.
END
Condition: End request
All replenishment operation flags must be “Not operated”.

- “Replenisher pump(P2-RA/P2-RB)” output amount calculation
  Next 1-unit output amount of replenisher pump(P2-RA/P2-RB)
  =Current 1-unit output amount × P2-RA/P2-RB replenisher tank capacity[C]/Total P2-RA/P2-RB output amount value[C]
  =Current 1-unit output amount × 1461.0ml/Total P2-RA/P2-RB output amount value[C]

- “Cartridge cleaning valve(P2-RA/P2-RB)” output amount calculation
  Next cartridge cleaning valve(P2-RA/P2-RB)” open time(fluctuation)
  =Current cartridge cleaning valve(P2-RA/P2-RB)” open time(fluctuation) × P2-RA/P2-RB replenisher tank capacity[B]/Total P2-RA/P2-RB output amount value[B]
  =Current cartridge cleaning valve(P2-RA/P2-RB)” open time(fluctuation) × 388.5ml/Total P2-RA/P2-RB output amount value[B]

*NOTE: In case of “Total P2-RA/P2-RB output amount value[B]”=0", set “Cartridge cleaning valve(P2-RA/P2-RB)” output amount to default.*



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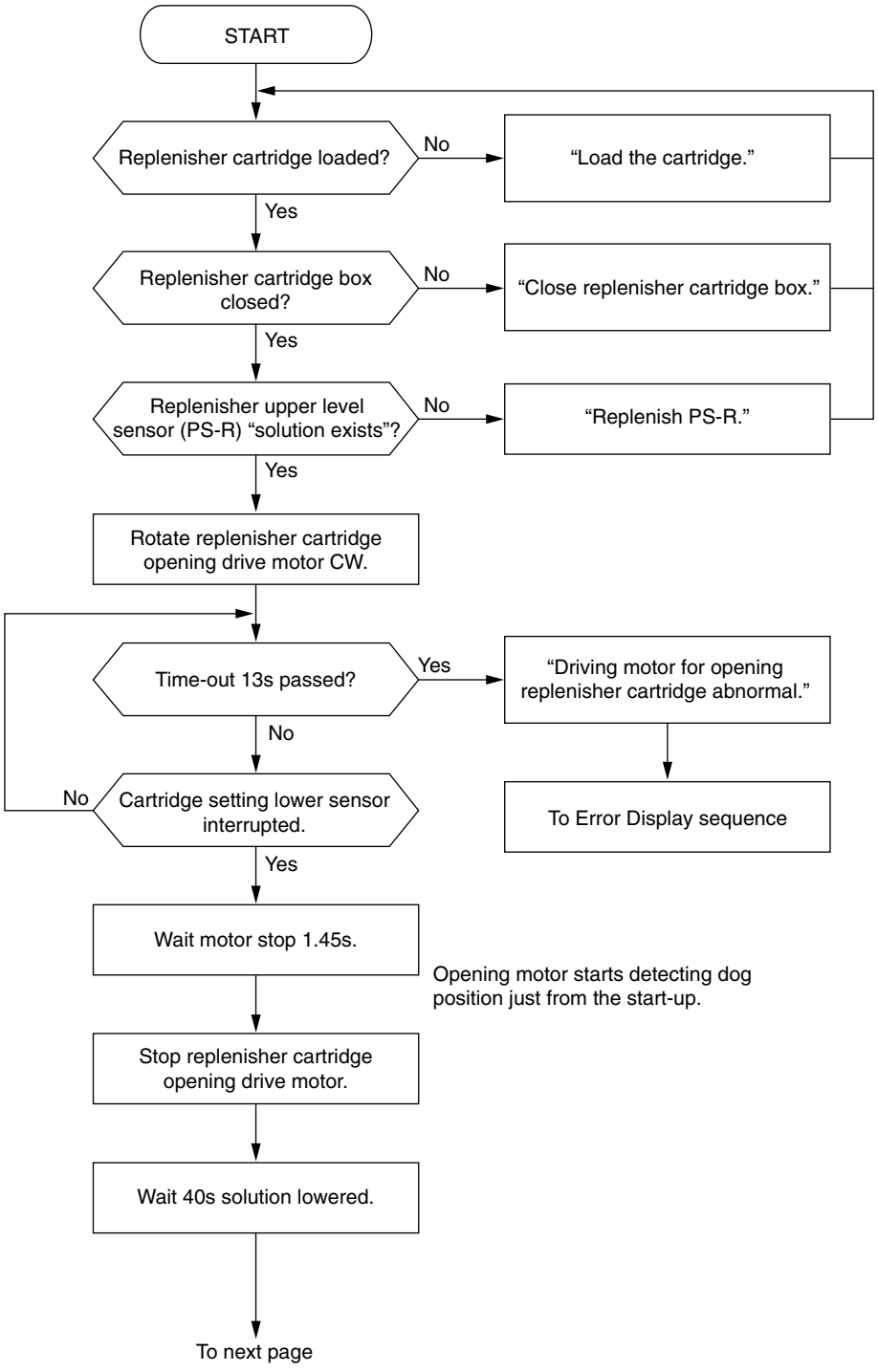
### 4.5.15 Auto Opening Control



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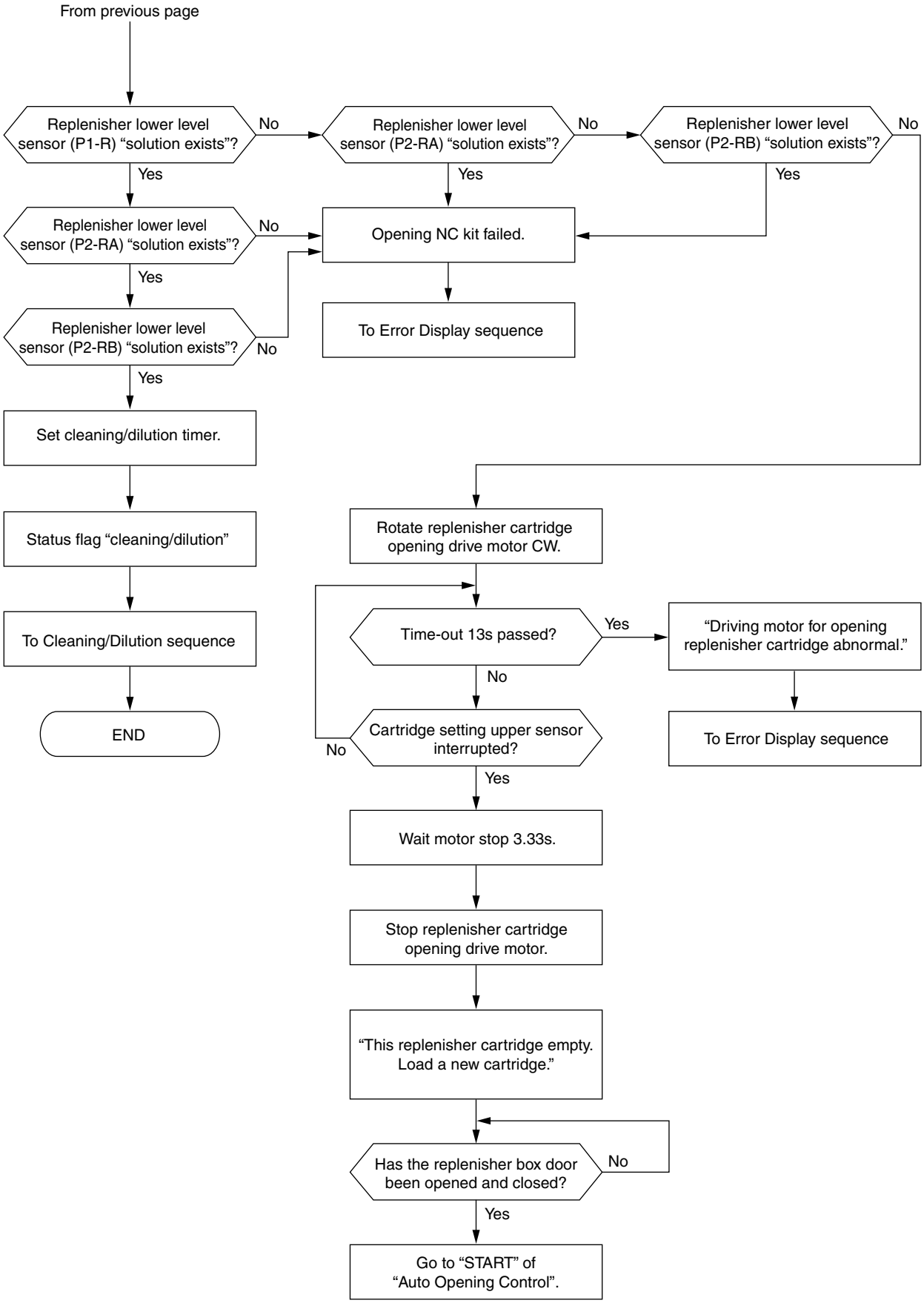

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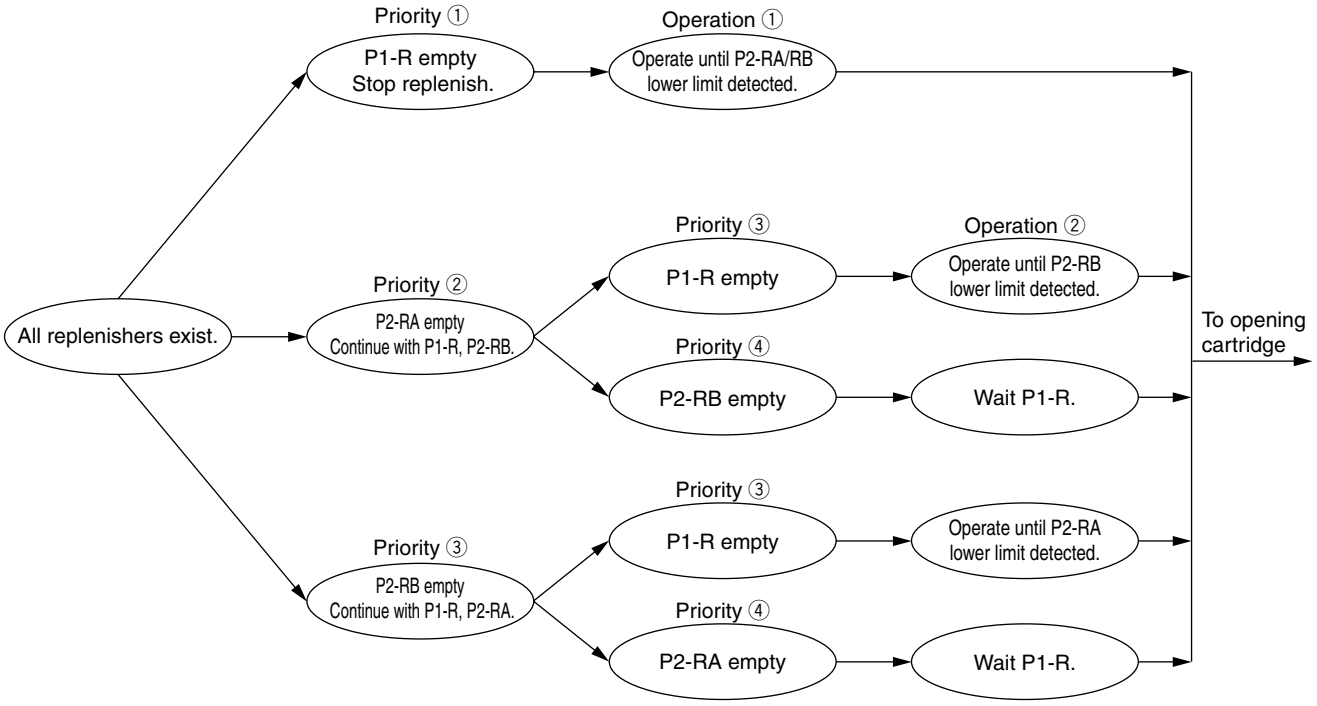
### 4.5.16 Replenisher Level Adjustment



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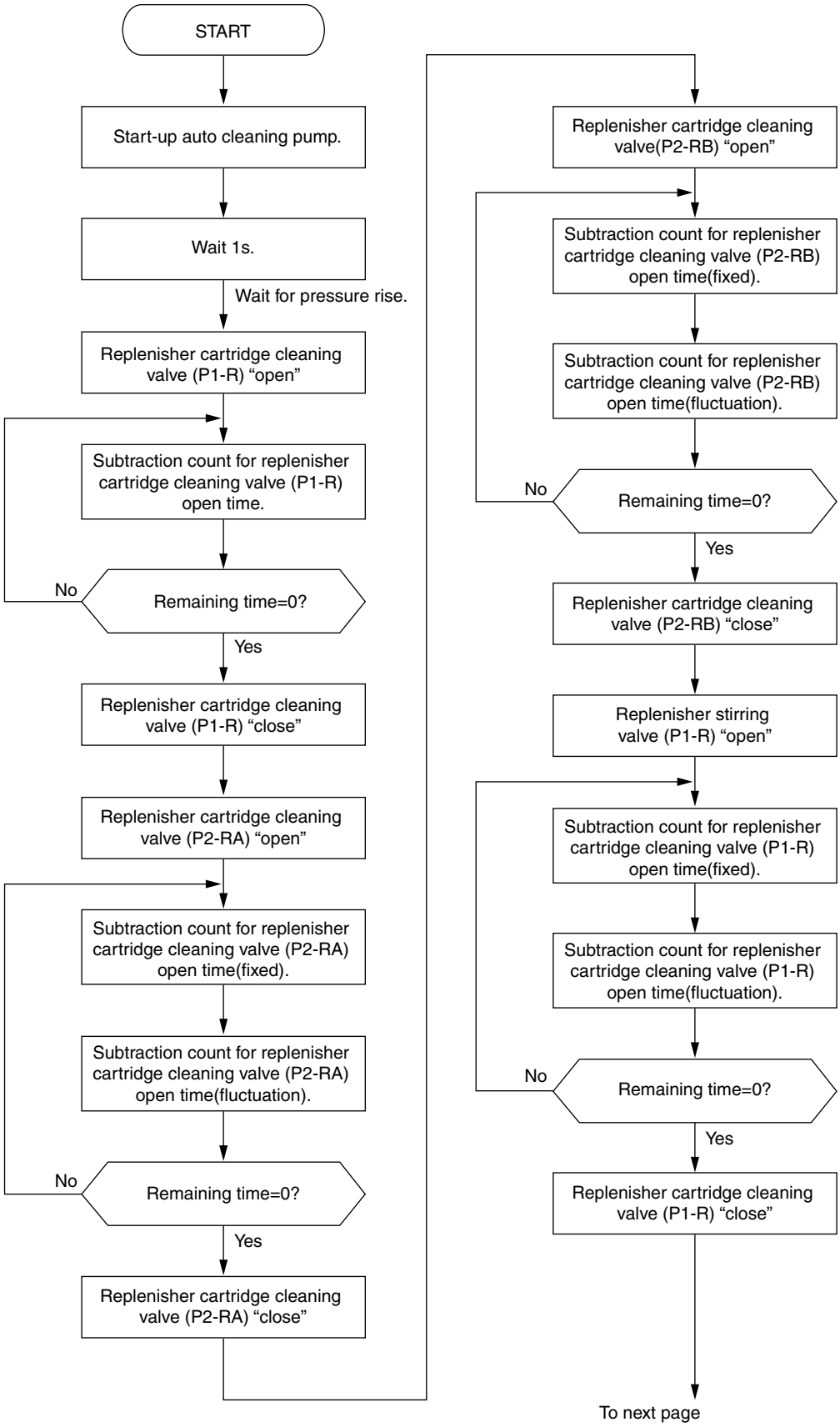
### 4.5.17 Cleaning/Dilution


START
Start-up auto cleaning pump.
Wait 1s.
Wait for pressure rise.
Replenisher cartridge cleaning valve (P1-R) “open”
Subtraction count for replenisher cartridge cleaning valve (P1-R) open time.
No
Remaining time=0?
Yes
Replenisher cartridge cleaning valve (P1-R) “close”
Replenisher cartridge cleaning valve (P2-RA) “open”
Subtraction count for replenisher cartridge cleaning valve (P2-RA) open time(fixed).
Subtraction count for replenisher cartridge cleaning valve (P2-RA) open time(fluctuation).
No
Remaining time=0?
Yes
Replenisher cartridge cleaning valve (P2-RA) “close”
Replenisher cartridge cleaning valve(P2-RB) “open”
Subtraction count for replenisher cartridge cleaning valve (P2-RB) open time(fixed).
Subtraction count for replenisher cartridge cleaning valve (P2-RB) open time(fluctuation).
No
Remaining time=0?
Yes
Replenisher cartridge cleaning valve (P2-RB) “close”
Replenisher stirring valve (P1-R) “open”
Subtraction count for replenisher cartridge cleaning valve (P1-R) open time(fixed).
Subtraction count for replenisher cartridge cleaning valve (P1-R) open time(fluctuation).
No
Remaining time=0?
Yes
Replenisher cartridge cleaning valve (P1-R) “close”
To next page

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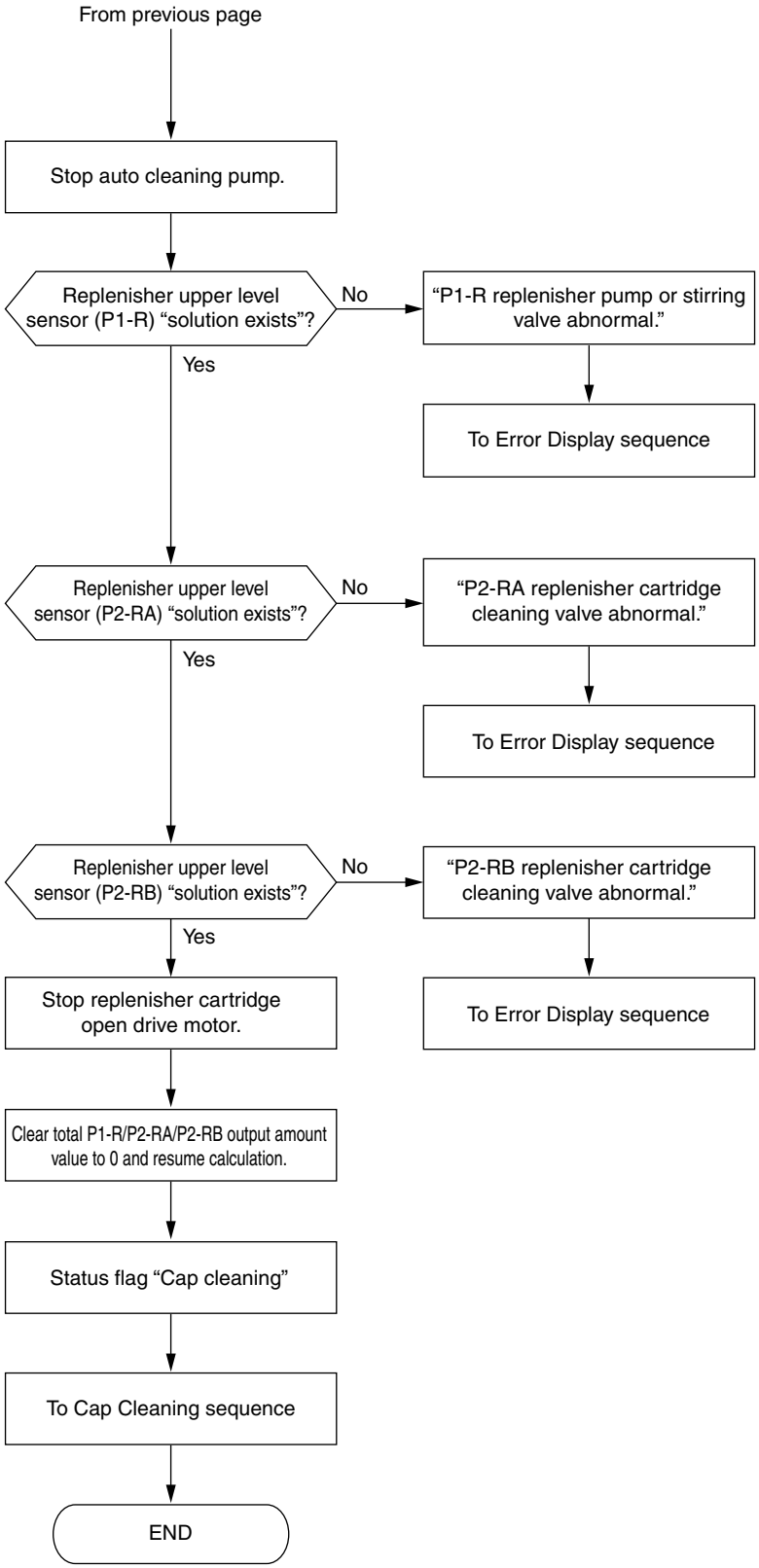
From previous page
Stop auto cleaning pump.
Replenisher upper level sensor (P1-R) “solution exists”?
No
“P1-R replenisher pump or stirring valve abnormal.”
To Error Display sequence
Yes
Replenisher upper level sensor (P2-RA) “solution exists”?
No
“P2-RA replenisher cartridge cleaning valve abnormal.”
To Error Display sequence
Yes
Replenisher upper level sensor (P2-RB) “solution exists”?
No
“P2-RB replenisher cartridge cleaning valve abnormal.”
To Error Display sequence
Yes
Stop replenisher cartridge open drive motor.
Clear total P1-R/P2-RA/P2-RB output amount value to 0 and resume calculation.
Status flag “Cap cleaning”
To Cap Cleaning sequence
END

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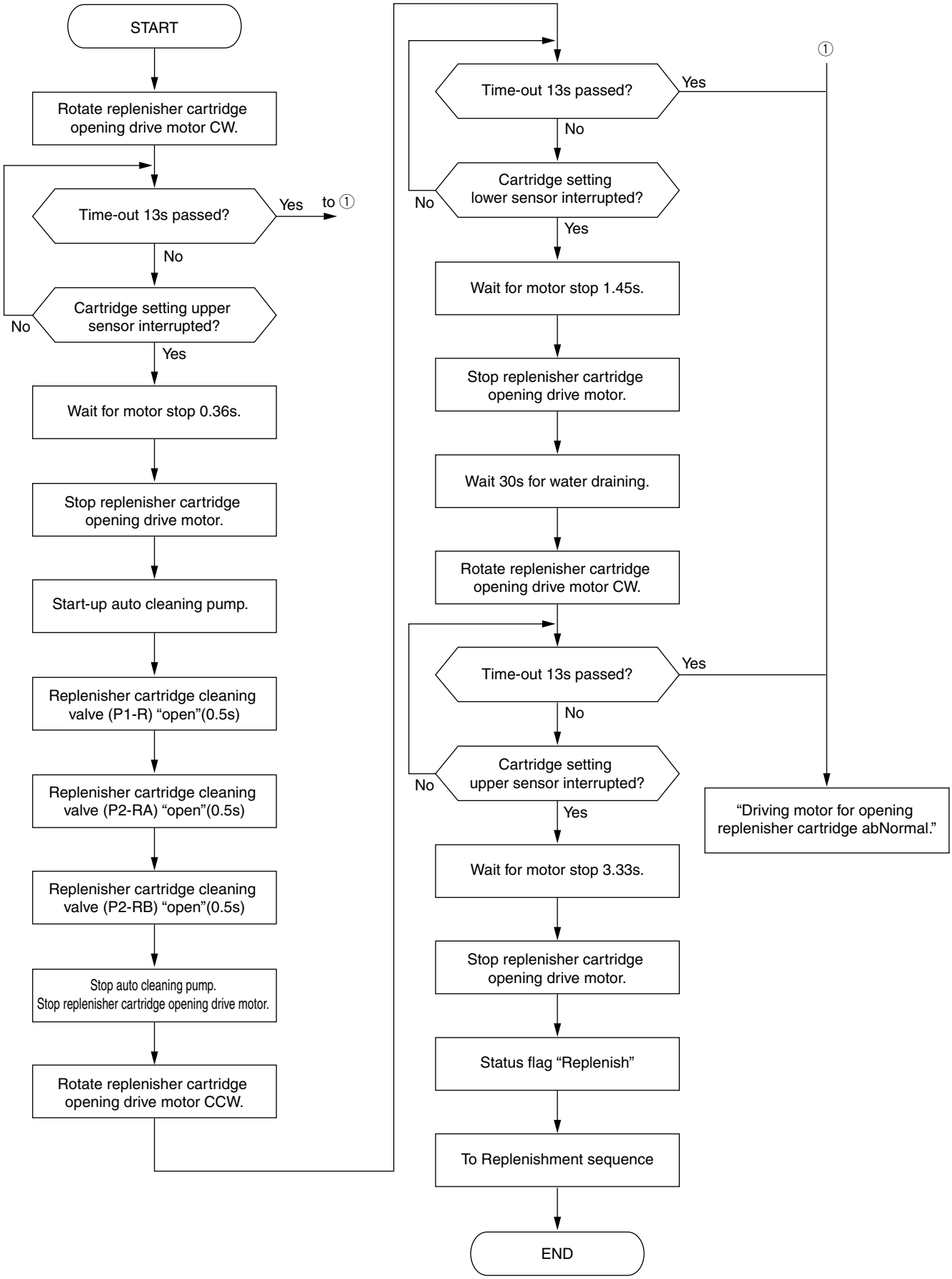
### 4.5.18 Replenisher Cartridge Cap Cleaning Control



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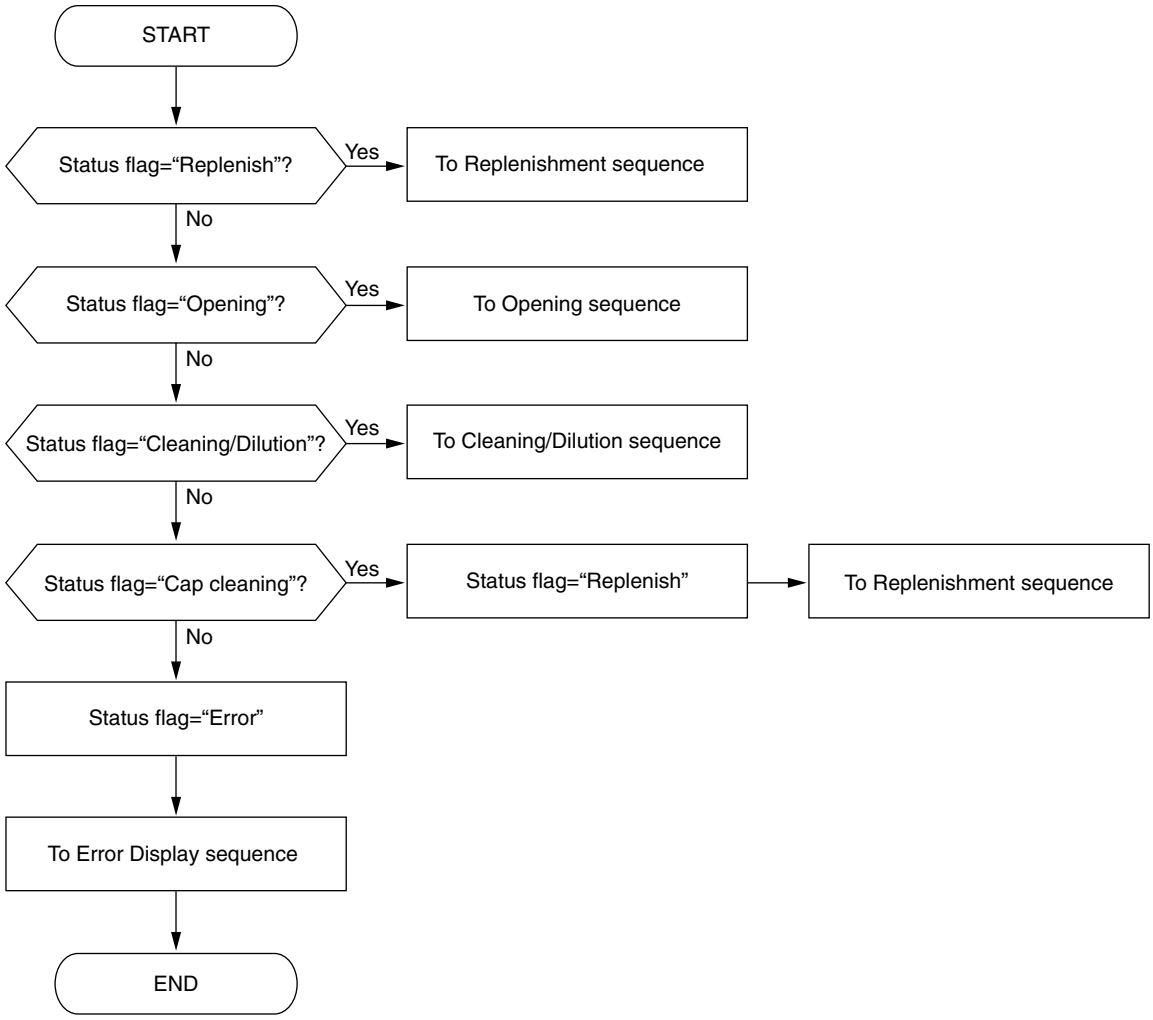
### 4.5.19 Power Supply Restore Control



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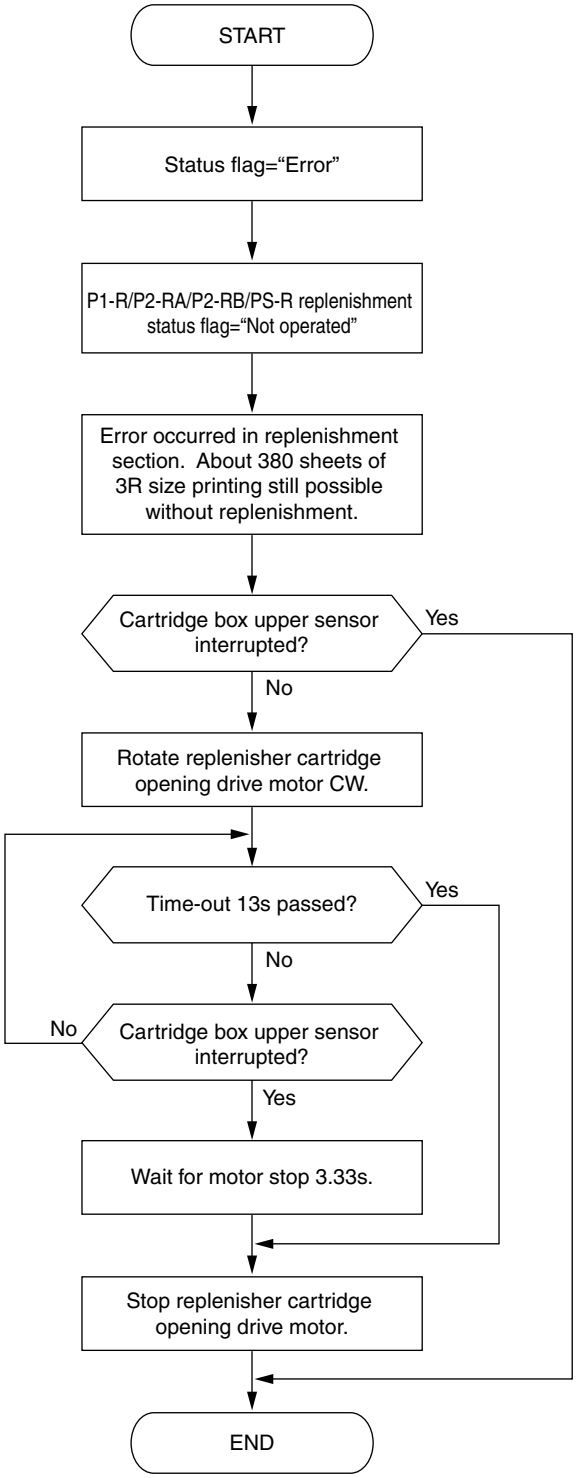
### 4.5.20 Error Display Control



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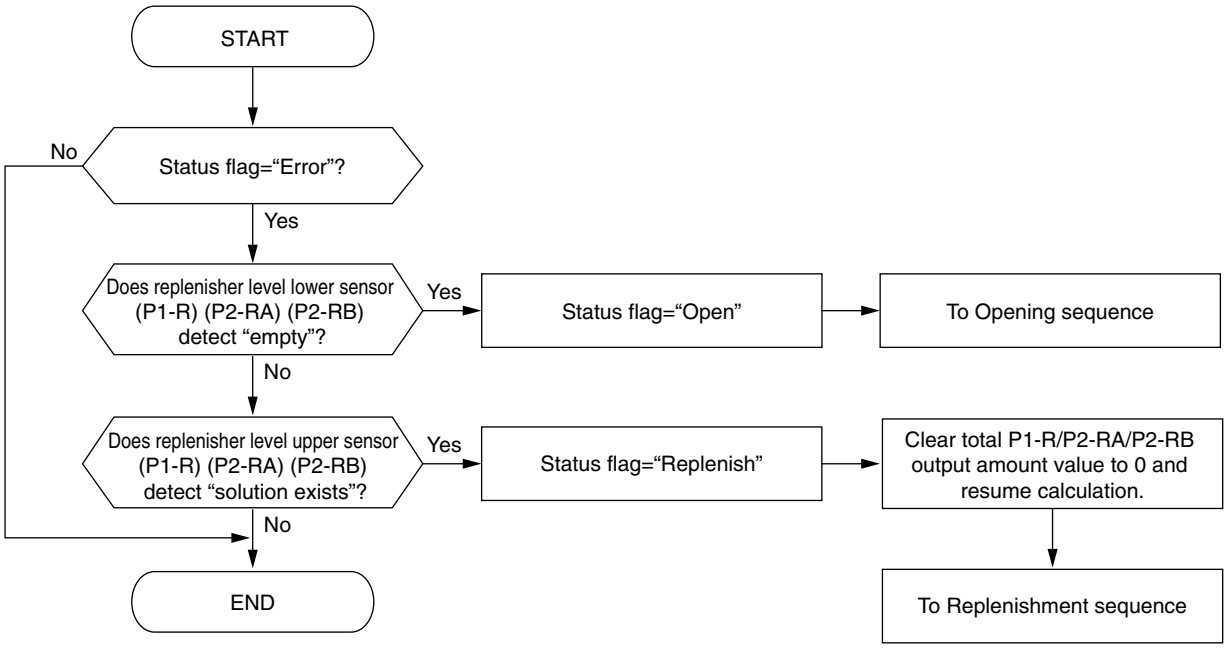
### 4.5.21 Error Restore Control



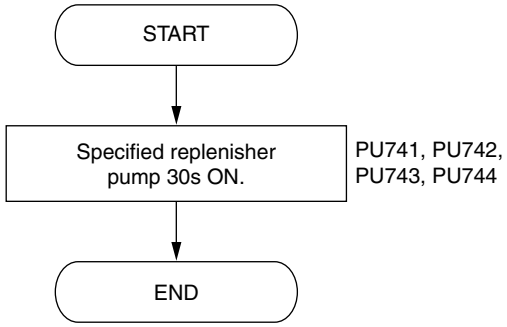

### 4.5.22 Pump Output Measurement

Measure the output amount of the processing tank replenisher pump.

- The following standard value is common to all processing methods.

| Replenisher pump | | P1-R | P2-RA | P2-RB | PS-R |
|---|---|---|---|---|---|
| Standard value | 50Hz | 54.0 | 54.0 | 54.0 | 57.0 |
| | 60Hz | 64.8 | 64.8 | 64.8 | 68.4 |

* Measure the output amount for each unit operation.



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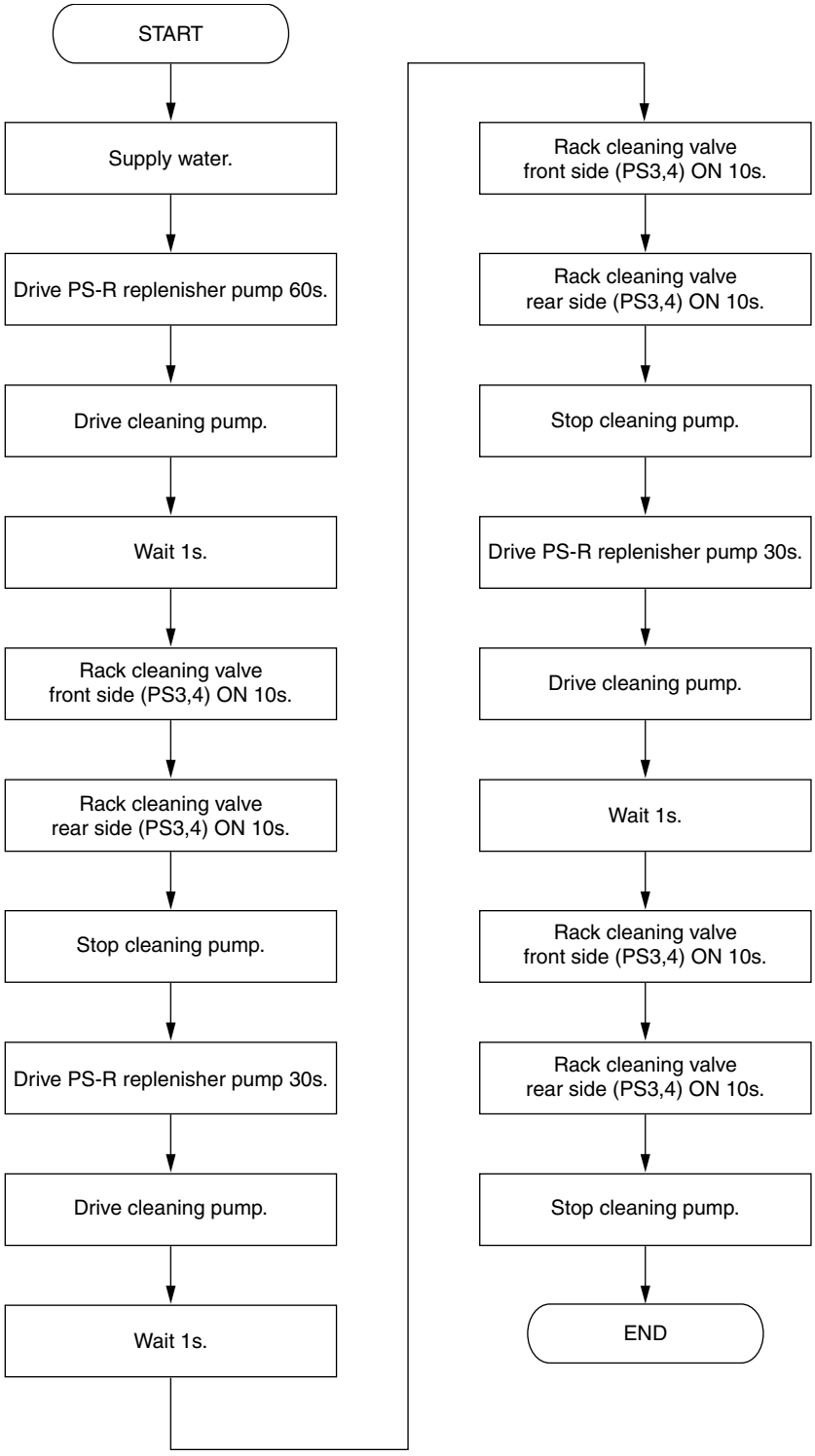
### 4.5.23 Auto Replenishment Control (at installation)


START
Supply water.
Drive PS-R replenisher pump 60s.
Drive cleaning pump.
Wait 1s.
Rack cleaning valve front side (PS3,4) ON 10s.
Rack cleaning valve rear side (PS3,4) ON 10s.
Stop cleaning pump.
Drive PS-R replenisher pump 30s.
Drive cleaning pump.
Wait 1s.
Rack cleaning valve front side (PS3,4) ON 10s.
Rack cleaning valve rear side (PS3,4) ON 10s.
Stop cleaning pump.
Drive PS-R replenisher pump 30s.
Drive cleaning pump.
Wait 1s.
Rack cleaning valve front side (PS3,4) ON 10s.
Rack cleaning valve rear side (PS3,4) ON 10s.
Stop cleaning pump.
END

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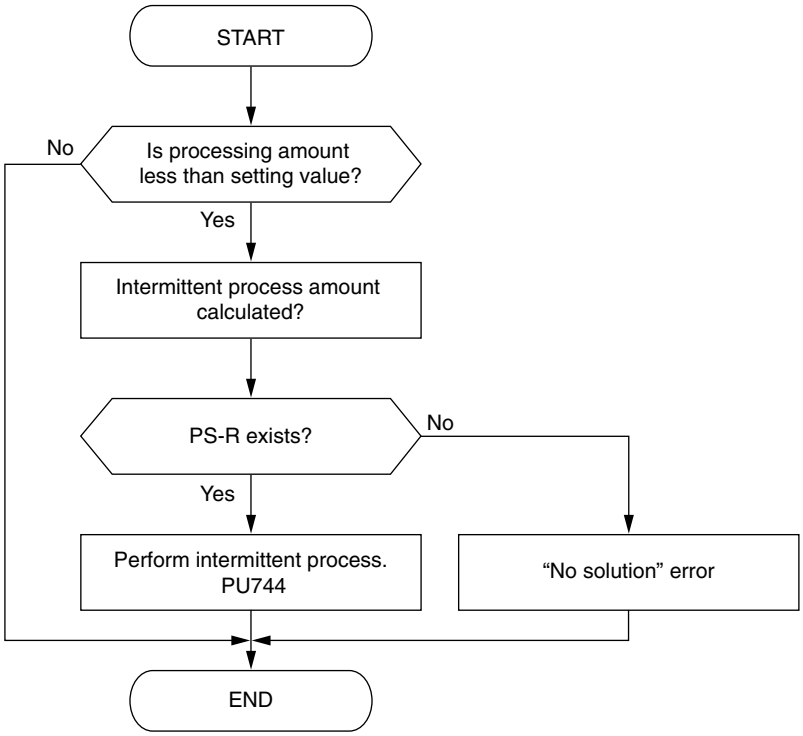
### 4.5.24 Intermittent Process

Prevent the performance deterioration of the processing solution when the paper processing amount does not reach the setting value.

Perform the intermittent process:
“when the paper processing amount of the previous day is less than the setting value.”
“when the paper processing amount of the last 7 days is less than the setting value.”

Minimum paper processing amount

| | Minimum paper processing amount of the previous day | Minimum paper processing amount of the last 7 days |
|---|---|---|
| LP1500SC | 6.8$m^2$ | 47.6$m^2$ |
| LP2000SC | 9.6$m^2$ | 67.2$m^2$ |



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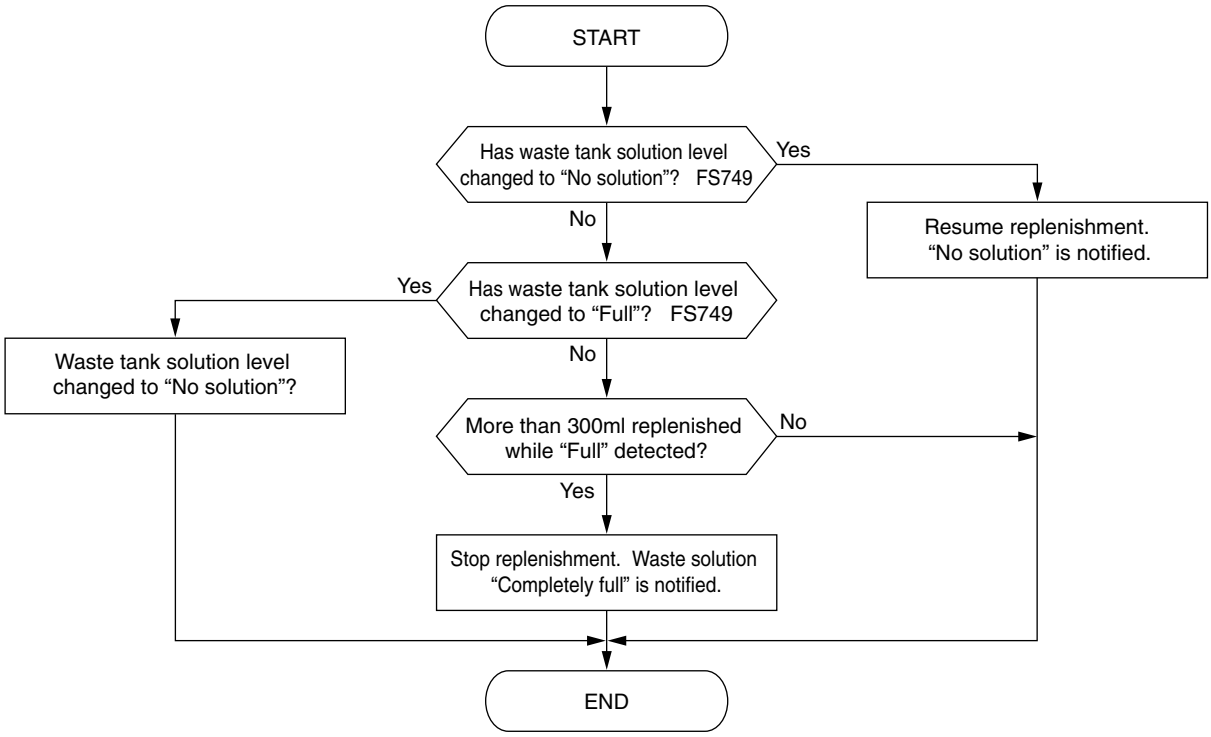
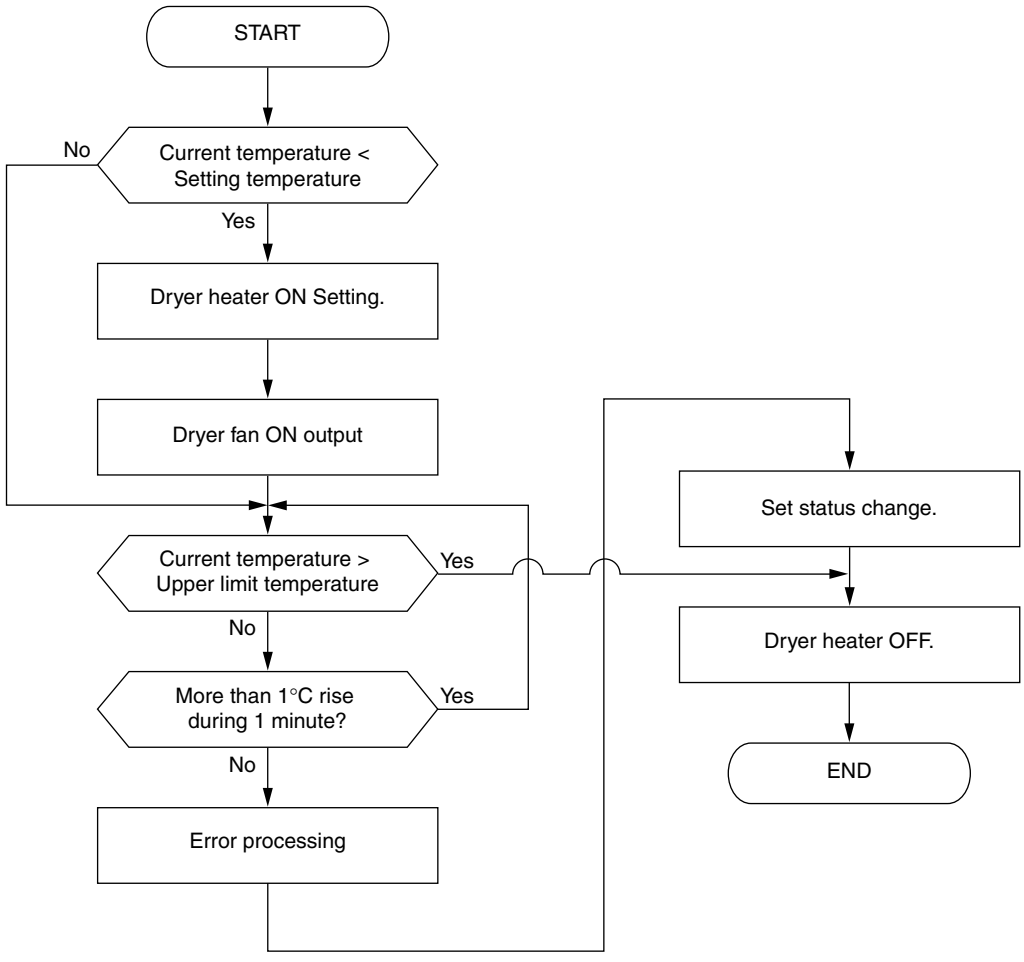
### 4.5.25 Waste Solution Process


START
Has waste tank solution level changed to “No solution”? FS749
Yes
No
Resume replenishment. “No solution” is notified.
Yes
Has waste tank solution level changed to “Full”? FS749
Waste tank solution level changed to “No solution”?
No
More than 300ml replenished while “Full” detected?
No
Yes
Stop replenishment. Waste solution “Completely full” is notified.
END



### 4.5.26 Dryer Section Heat-up Control

4.5.25
4.5.26



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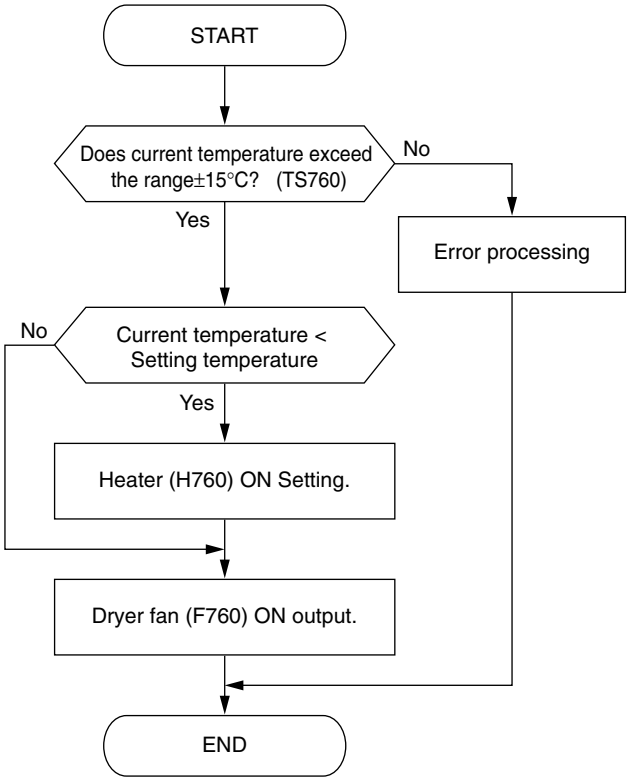
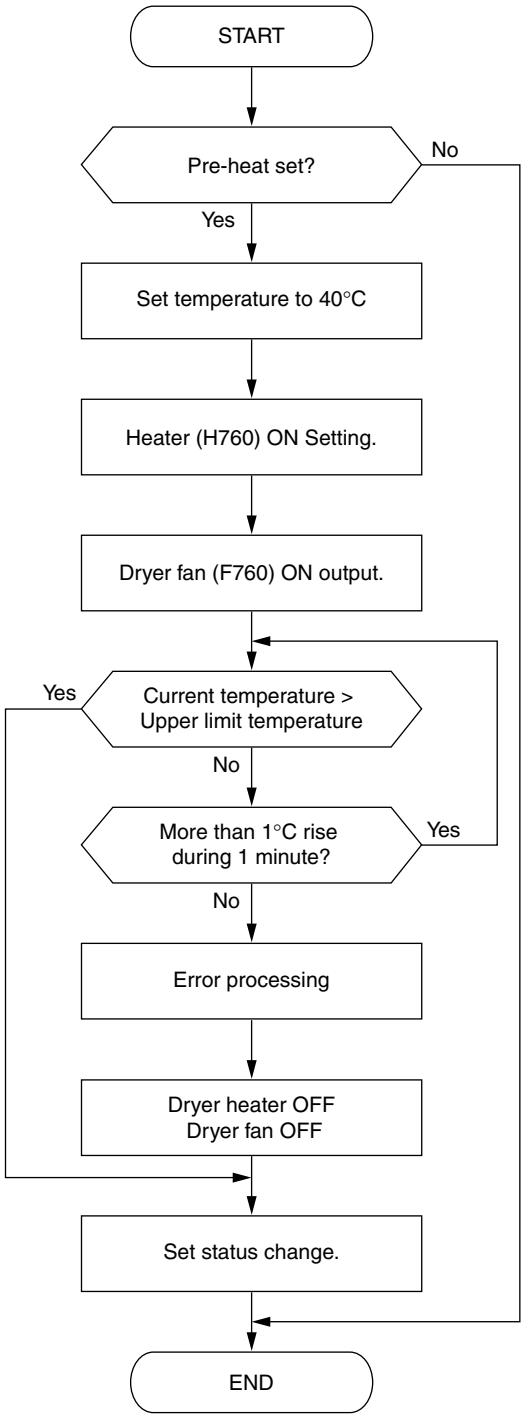
### 4.5.27 Dryer Section Temperature Adjustment




### 4.5.28 Dryer Section Pre-heat Control



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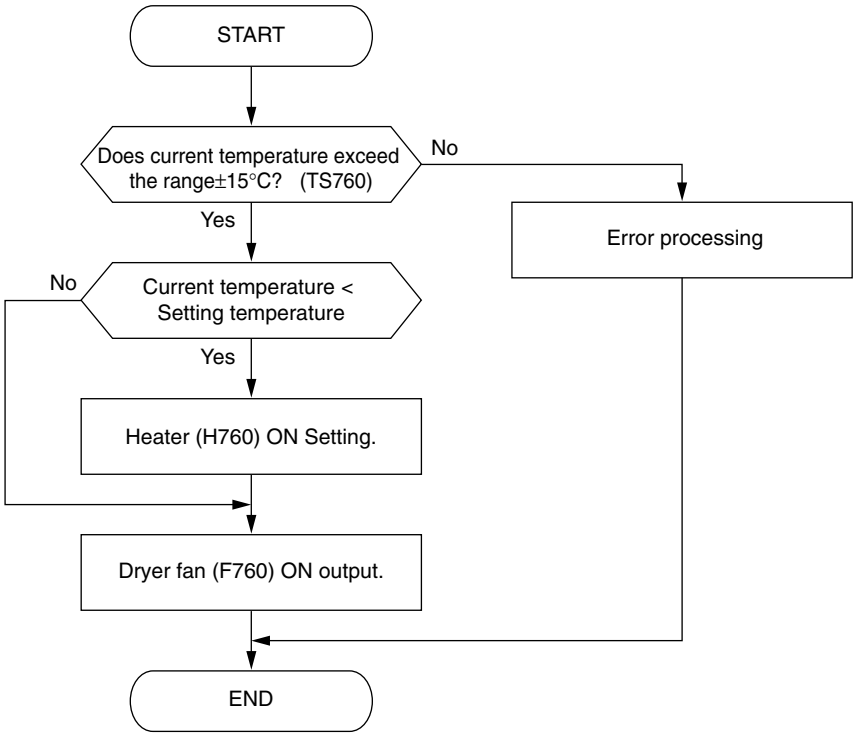
### 4.5.29 Dryer Section Pre-heat Drive Temperature Adjustment

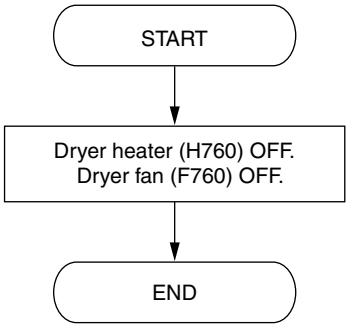





### 4.5.30 Dryer Section Cool-down Control

Stops the temperature control of the dryer section.

4.5.29
4.5.30



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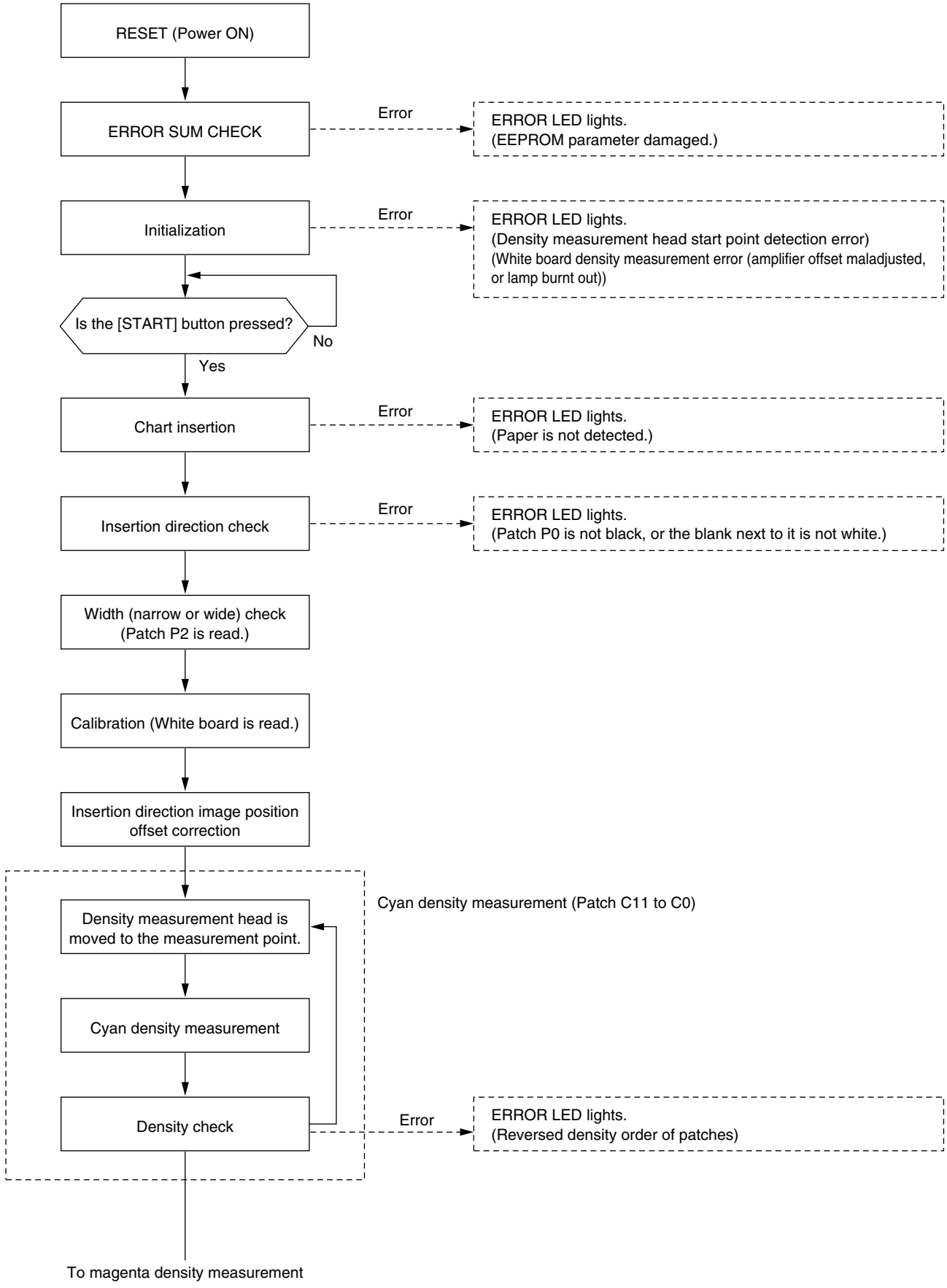
# 4.6 Densitometer

## 4.6.1 Densitometer AD100



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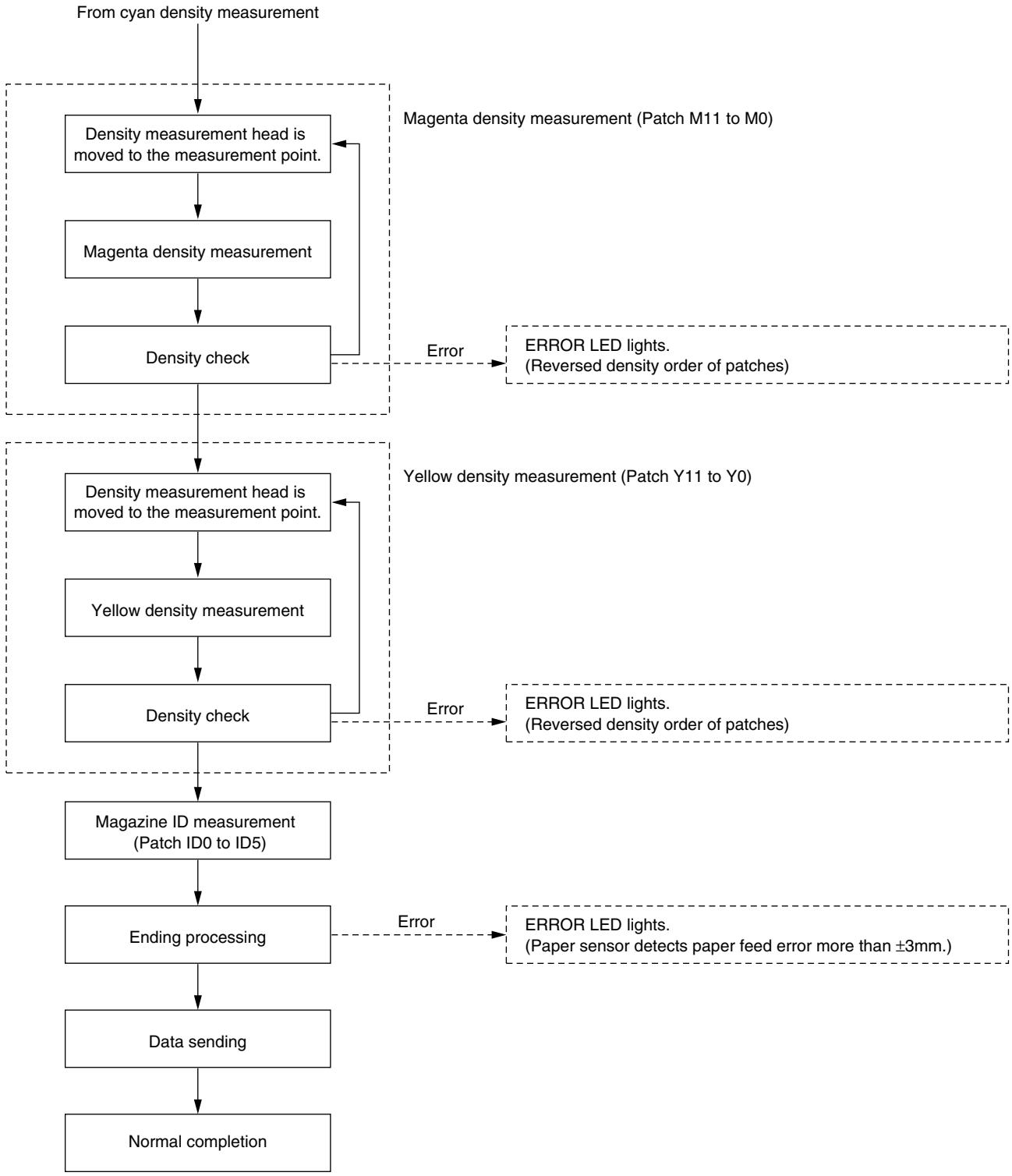


* Refer to the “Calibration Chart Dimensions” for patch number.

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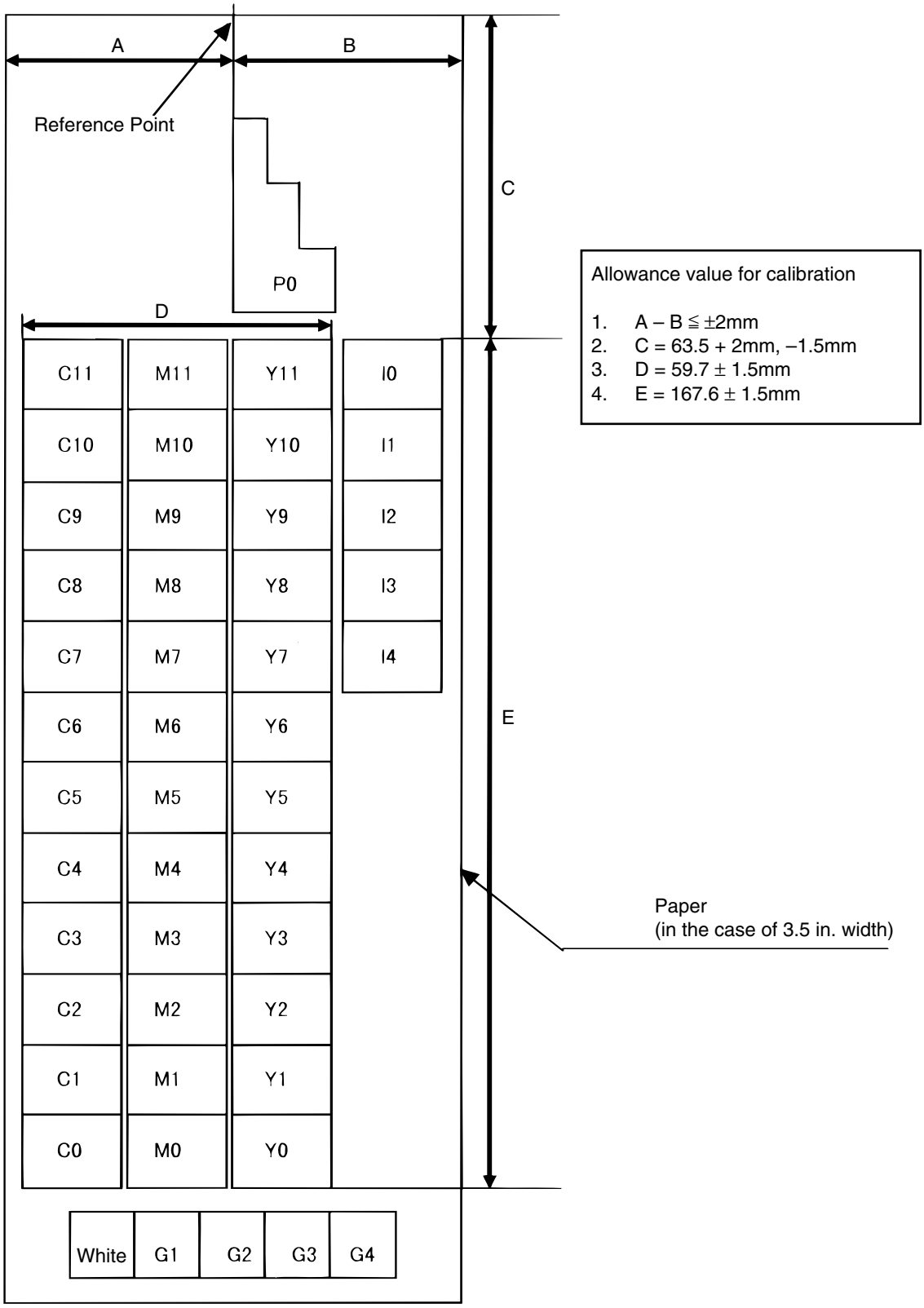
**Calibration Chart Dimensions (Narrow width paper)**



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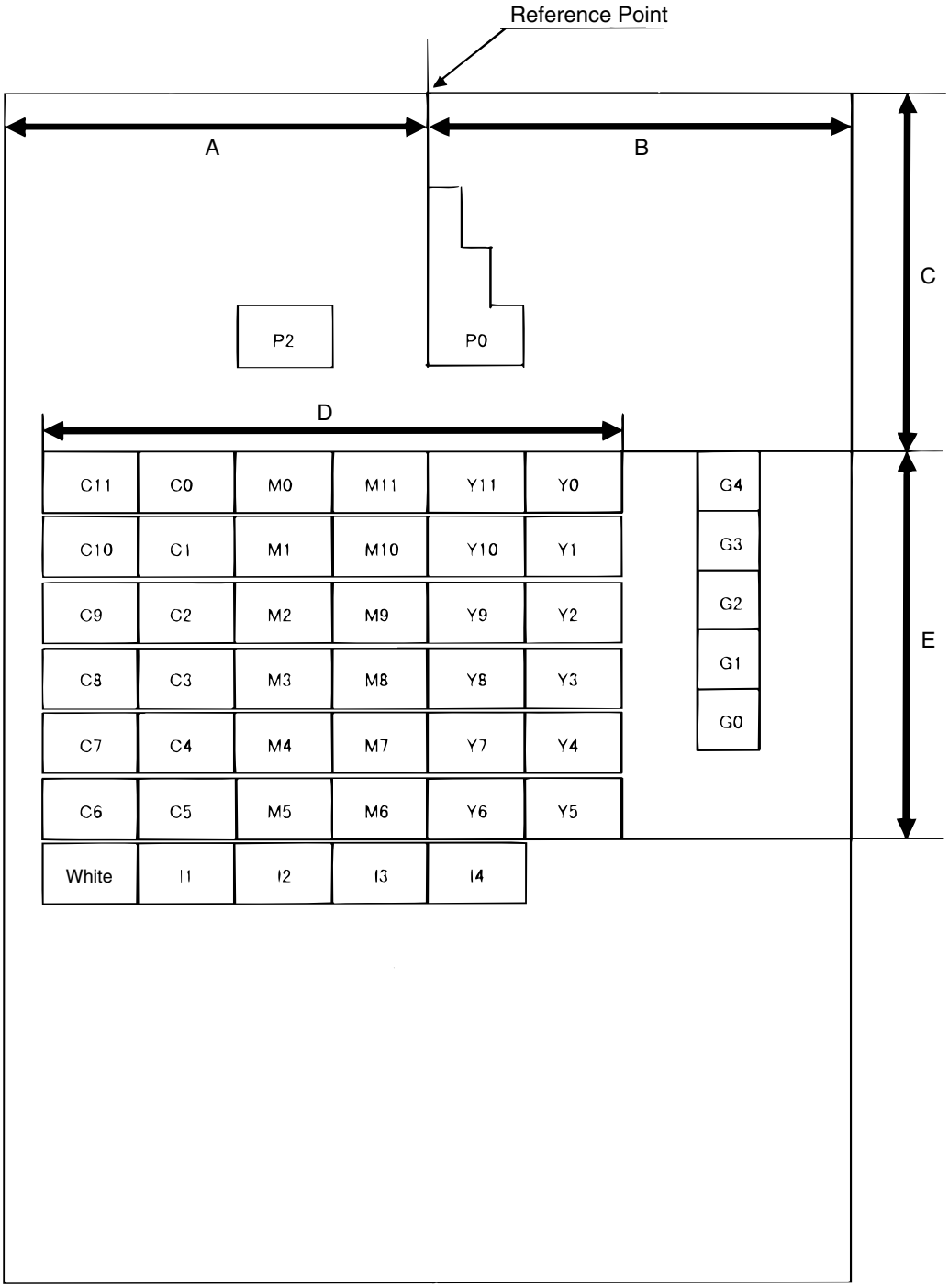
**Calibration Chart Dimensions (Wide width paper)**




Allowance value for calibration

1. A – B ≦ ±2mm
2. C = 76.2 + 2mm, –1.5mm
3. D = 121.9 ± 1.5mm
4. E = 82.5 ± 1.5mm

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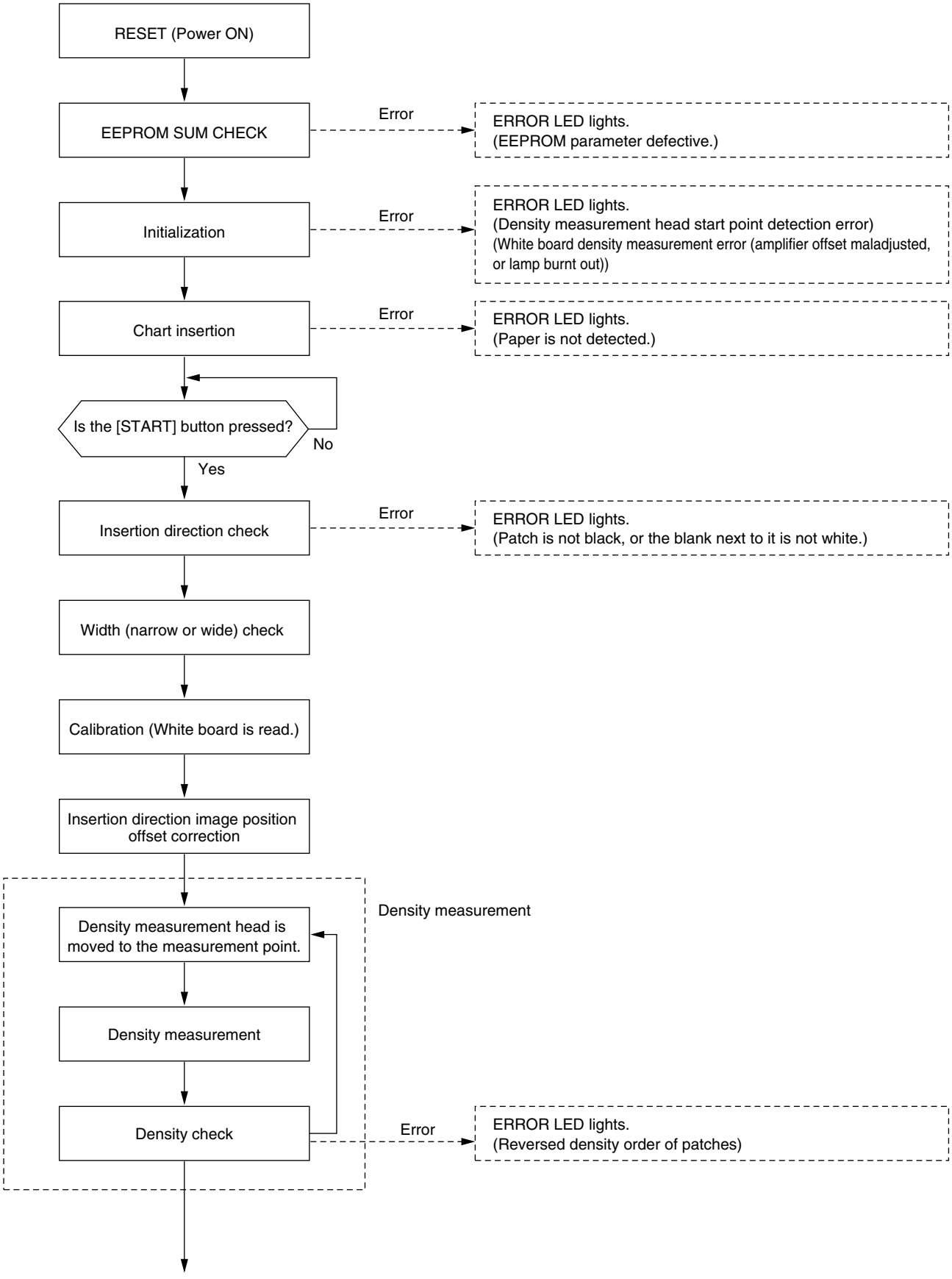
### 4.6.2 Densitometer AD200



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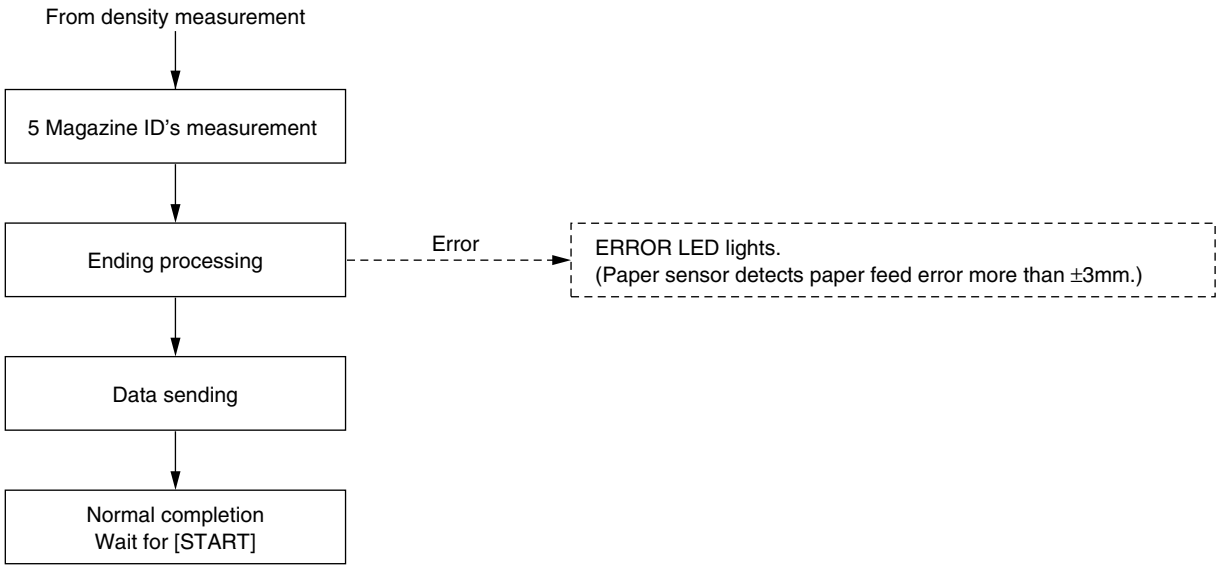

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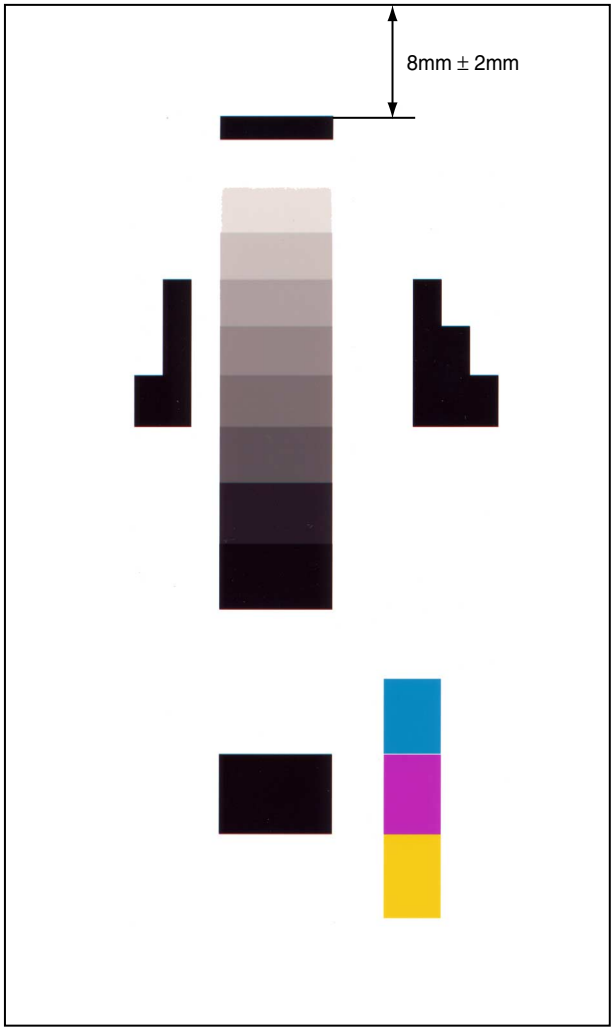
**Calibration Chart**



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# 5. I/O PARTS DIAGRAM

5.1 Scanner (SP-3000) ..... 5-2

5.2 Auto Film Carrier NC100AY ..... 5-4

5.3 Multi-film Carrier MFC10AY (Optional) ..... 5-6

5.4 Printer Section ..... 5-7

5.5 Processor Section ..... 5-10

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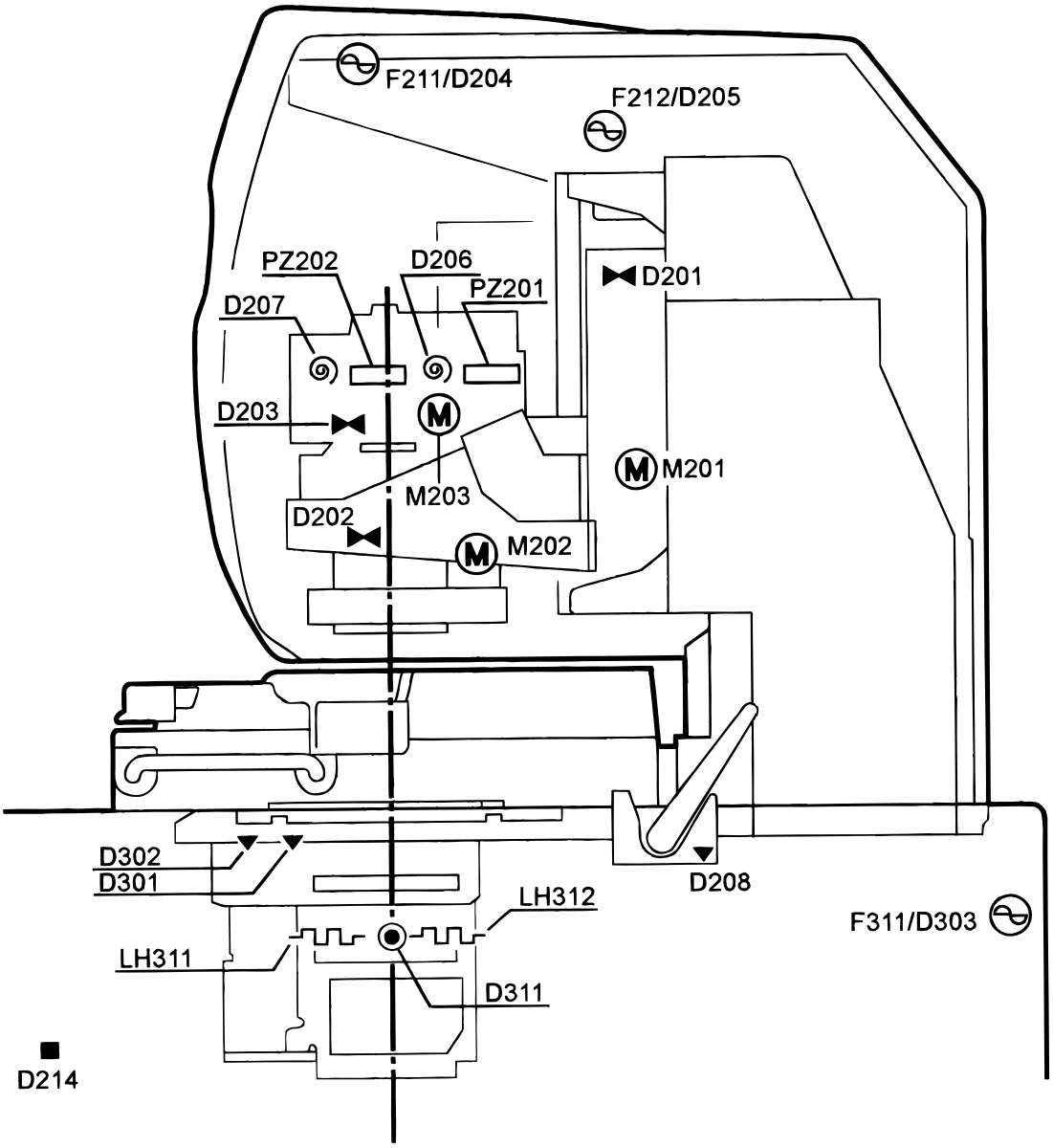
# 5.1 Scanner (SP-3000)




- Micro Switch
- Motor
- Temperature Sensor
- Photo-interrupter
- Fan
- Displacement Sensor
- Switch
- Heater

ZII217

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| Symbol | Name | Remarks |
|---|---|---|
| D201 | Conjugate Length Variable Section Home Position Sensor | Photo Interrupter |
| D202 | Lens Home Position Sensor | Photo Interrupter |
| D203 | Shutter Home Position Sensor | Photo Interrupter |
| D204 | Scanner Section Exhaust Fan Sensor | |
| D205 | Scanner Section Cooling Fan Sensor | |
| D206 | Displacement Sensor 1 | |
| D207 | Displacement Sensor 2 | |
| D208 | Carrier Lock Sensor | Micro Switch |
| D301 | 135 Diffusion box Sensor | Micro Switch |
| D302 | 120 Diffusion Box Sensor | Micro Switch |
| D311 | LED Light Source Temperature Sensor | |
| D214 | Start Switch | |
| D303 | Light Source Section Exhaust Fan Sensor | |
| F211 | Scanner Section Exhaust Fan | DC24V/0.07A |
| F212 | Scanner Section Cooling Fan | DC24V/0.07A |
| F311 | Light Source Section Exhaust Fan | DC24V/0.04A |
| F321 | Image Processing Section Cooling Fan | DC12V/0.14A |
| L301 | R-LED Light Source | |
| L302 | G-LED Light Source | |
| L303 | B-LED Light Source | |
| L304 | IR-LED Light Source | |
| LH311 | LED Heater 1 | |
| LH312 | LED Heater 2 | |
| M201 | Conjugate Length Variable Motor | Pulse Motor |
| M202 | Lens Drive Motor | Pulse Motor |
| M203 | Shutter Drive Motor | Pulse Motor |
| PZ201 | Piezoelectric Actuator 1 | (Pixel Shifting) |
| PZ202 | Piezoelectric Actuator 2 | (Pixel Shifting) |

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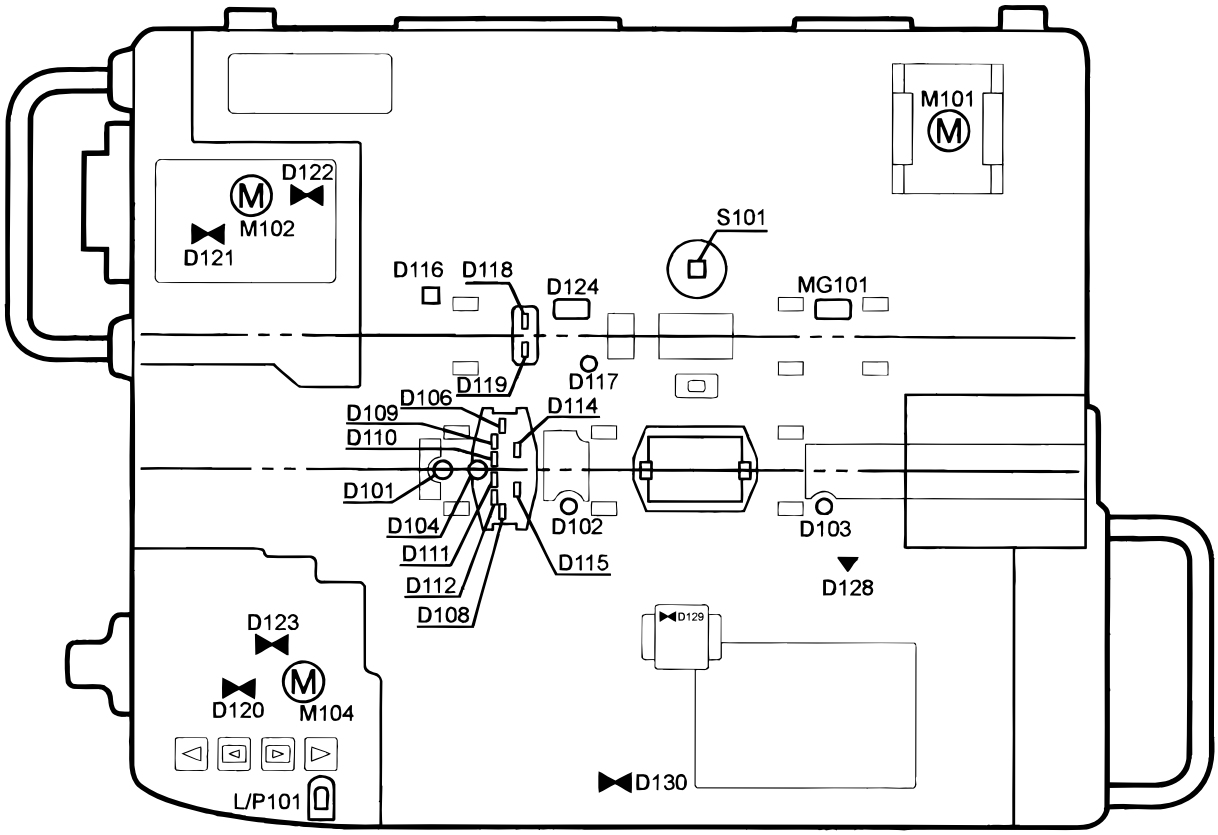
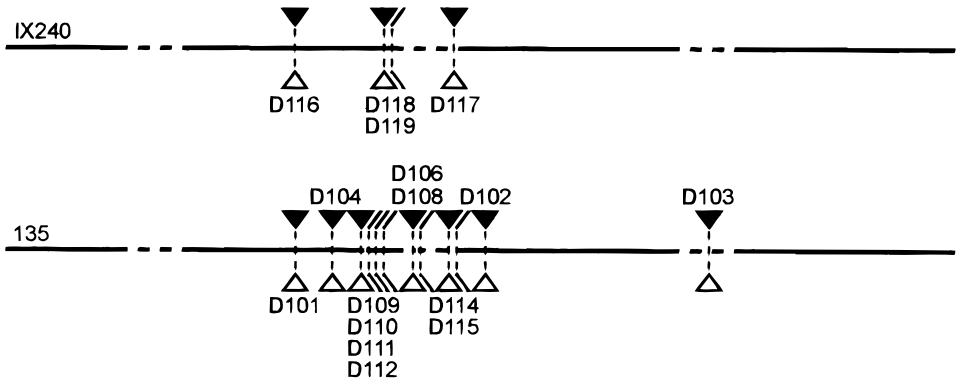
## 5.2 Auto Film Carrier NC100AY






- Micro Switch
- Photo-interrupter
- Motor
- Solenoid
- LED
- LED/Photosensitive device

ZII216

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| Symbol | Name | Remarks |
|---|---|---|
| D101 | 135 Leading End Sensor | LED/Phototransistor |
| D102 | 135 Upstream Perforation Sensor | LED/Phototransistor |
| D103 | 135 Downstream Perforation Sensor | LED/Phototransistor |
| D104 | 135 Check Tape Sensor | LED/Phototransistor |
| D106-A | 135 Rear Inner Bar Code Sensor | LED/PSD |
| D106-B | 135 Rear Outer Bar Code Sensor | LED/PSD |
| D108-A | 135 Front Inner Bar Code Sensor | LED/PSD |
| D108-B | 135 Front Outer Bar Code Sensor | LED/PSD |
| D109 | 135 Rear Outer Frame Sensor | LED/PSD |
| D110 | 135 Rear Inner Frame Sensor | LED/PSD |
| D111 | 135 Front Inner Frame Sensor | LED/PSD |
| D112 | 135 Front Outer Frame Sensor | LED/PSD |
| D114-A | 135 Rear Inner Panorama Sensor | LED/PSD |
| D114-B | 135 Rear Outer Panorama Sensor | LED/PSD |
| D115-A | 135 Front Inner Panorama Sensor | LED/PSD |
| D115-B | 135 Front Outer Panorama Sensor | LED/PSD |
| D116-A | IX240 Inner Leading End/Trailing End/Bar Code Sensor | LED/PSD |
| D116-B | IX240 Outer Leading End/Trailing End/Bar Code Sensor | LED/PSD |
| D117 | IX240 Perforation Sensor | LED/Phototransistor |
| D118 | IX240 Rear Unexposed Frame Sensor | LED/PSD |
| D119 | IX240 Front Unexposed Frame Sensor | LED/PSD |
| D120 | Door Open/Close Sensor | Photo Interrupter (SSB22) |
| D121 | IPI Sensor | Photo Interrupter (SSA23) |
| D122 | Supply Motor Home Position Sensor | Photo Interrupter (SSD23) |
| D123 | Cartridge Set Sensor | Photo Interrupter (SSB22) |
| D124 | Magnetic Reading Head | |
| D128 | Pressure Cover Open/Close Sensor | Micro Switch |
| D129 | 135 Feed Lane Position Sensor | Photo Interrupter |
| D130 | IX240 Feed Lane Position Sensor | Photo Interrupter |
| D131 | Left Frame Adjustment Key (<) | |
| D132 | Frame Return Key ([<]) | |
| D133 | Frame Feed Key ([>]) | |
| D134 | Right Frame Adjustment Key (>) | |
| D135 | Feed Roller Rotation Sensor | Photo Interrupter (SSE23) |
| L/P101 | Indicator Lamp | LED (Green/Red) |
| M101 | Feed Motor | Pulse Motor |
| M102 | Supply Motor | Pulse Motor |
| M104 | Door Motor | Pulse Motor |
| MG101 | Magnetic Writing Head | |
| S101 | Solenoid | |

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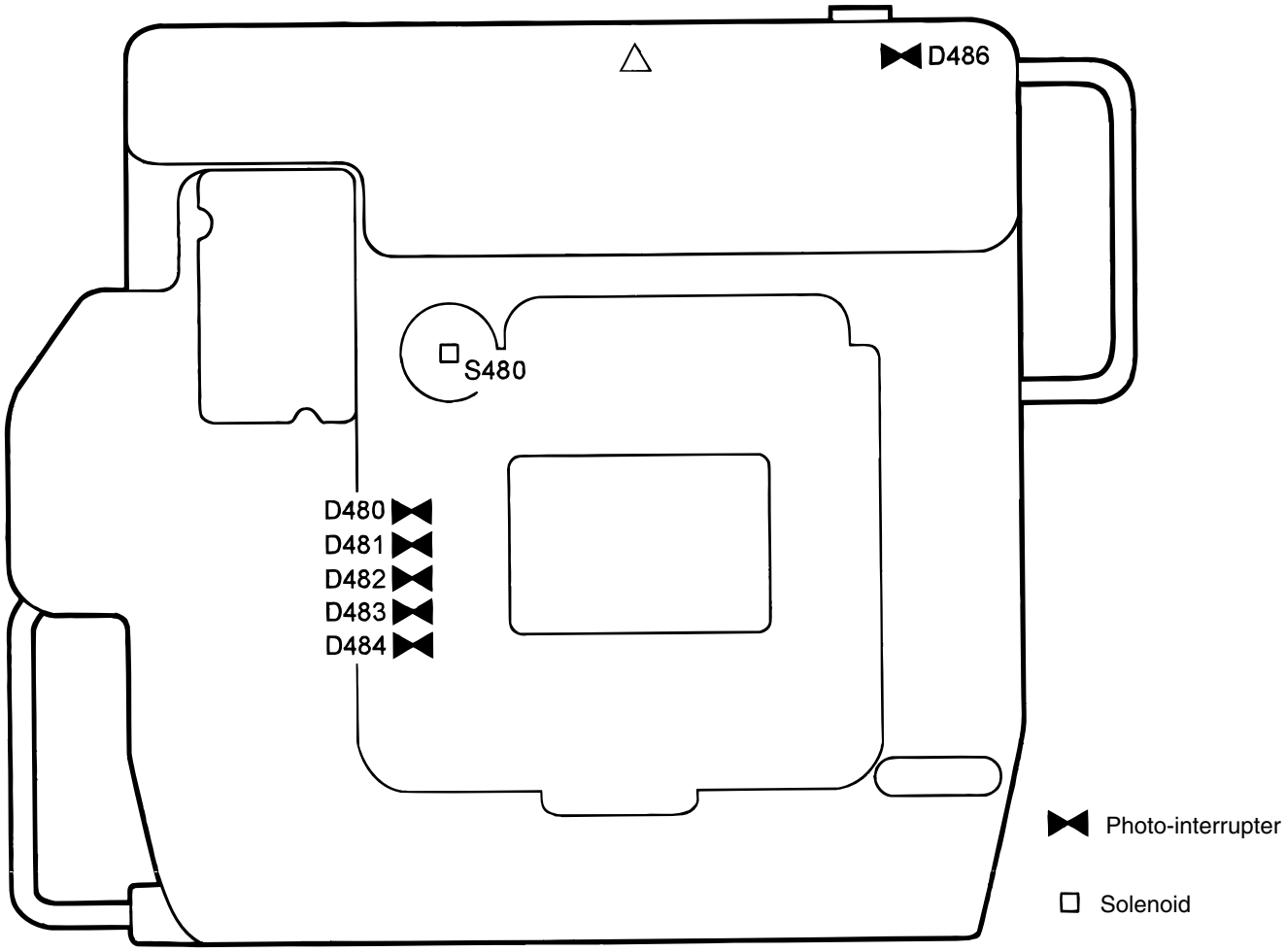
## 5.3 Multi-film Carrier MFC10AY (Optional)




ZII215

| Symbol | Name | Remarks |
|---|---|---|
| D480 | Film Mask Sensor 0 | Photo Interrupter (Rear) |
| D481 | Film Mask Sensor 1 | Photo Interrupter |
| D482 | Film Mask Sensor 2 | Photo Interrupter |
| D483 | Film Mask Sensor 3 | Photo Interrupter |
| D484 | Film Mask Sensor 4 | Photo Interrupter (Front) |
| D486 | Mask Table Slider Position Sensor | Photo Interrupter |
| S480 | Solenoid | |

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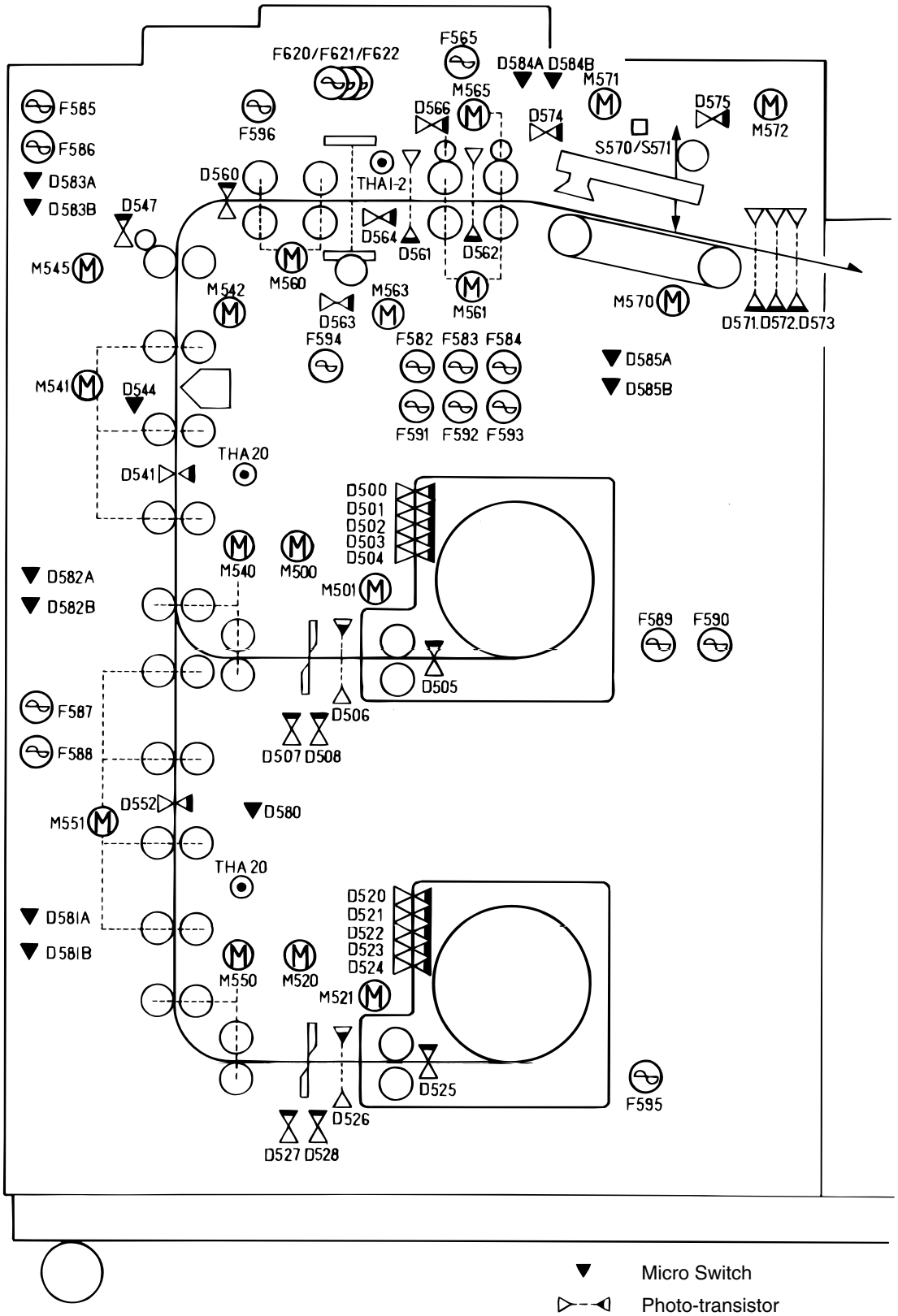


EZ1198

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## ■ Paper Feeding Section

| Symbol | Name | Remark |
|---|---|---|
| D500~D504 | Upper Magazine ID Sensor | Photo Interrupter |
| D505 | Upper Paper End Sensor | Photo Interrupter |
| D506 | Upper Splice Sensor | Flood LED, Photo-transistor |
| D507 | Upper Cutter Home Position Sensor(Open) | Photo Interrupter |
| D508 | Upper Cutter Home Position Sensor(Close) | Photo Interrupter |
| D520~D524 | Lower Magazine ID Sensor | Photo Interrupter |
| D525 | Lower Paper End Sensor | Photo Interrupter |
| D526 | Lower Splice Sensor | Flood LED, Photo-transistor |
| D527 | Lower Cutter Home Position Sensor(Open) | Photo Interrupter |
| D528 | Lower Cutter Home Position Sensor(Close) | Photo Interrupter |
| D541 | Middle Side Door Section Paper Sensor | Photo Interrupter |
| D544 | Back Printer Sensor | Micro Switch |
| D547 | Upper Side Door Section Nip Release Sensor | Photo Interrupter |
| D552 | Lower Side Door Section Paper Sensor | Photo Interrupter |
| D580 | Magazine Section Door Sensor Interlock Switch | Micro Switch |
| D581A/B | Lower Side Door Sensor Interlock Switch | Micro Switch |
| D582A/B | Middle Side Door Sensor Interlock Switch | Micro Switch |
| D583A/B | Upper Side Door Sensor Interlock Switch | Micro Switch |
| F594 | Magazine Section Cooling Fan | |
| M500 | Upper Cutter Motor | DC Motor |
| M501 | Upper Paper Supply Motor | Pulse Motor |
| M520 | Lower Cutter Motor | DC Motor |
| M521 | Lower Side Paper Feed Motor | Pulse Motor |
| M540 | Middle Side Door Turn Section Feed Motor | Pulse Motor |
| M541 | Middle Side Door Section Feed Motor | Pulse Motor |
| M542 | Upper Side Door Section Feed Motor | Pulse Motor |
| M545 | Upper Side Door Section Nip Release Motor | Pulse Motor |
| M550 | Lower Side Door Turn Section Feed Motor | Pulse Motor |
| M551 | Lower Side Door Section Feed Motor | Pulse Motor |
| THA20 | Ambient Temperature Sensor | IC |

## ■ Exposure Section

| Symbol | Name | Remark |
|---|---|---|
| D560 | Exposure Section Feed Unit Paper Sensor | Photo Interrupter |
| D561 | Exposure Section Entrance Paper Sensor | Flood LED, Photo-transistor |
| D562 | Pre-exposure Paper Sensor | Flood LED, Photo-transistor |
| D563 | Paper Width Guide Home Position Sensor | Photo Interrupter |
| D564 | Fork Position Sensor | Photo Interrupter |
| D566 | Exposure Section Nip Release Sensor | Photo Interrupter |
| D585A/B | Exposure Section Front Cover Detecting Interlock Switch | Micro Switch |

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| Symbol | Name | Remark |
|---|---|---|
| F565 | Exposure Section Nip Motor Cooling Fan | |
| F585 | Exposure Section Cooling Fan | |
| F586 | Exposure Section Cooling Fan | |
| F596 | Exposure Section Cooling Fan | |
| F620 | Exposure Section Anti-dust Pressure Fan 1 | |
| F621 | Exposure Section Anti-dust Pressure Fan 2 | |
| F622 | Exposure Section Anti-dust Pressure Fan 3 | |
| M560 | Pre-exposure Feed Motor | Pulse Motor |
| M561 | Sub-scanning Motor | Pulse Motor |
| M563 | Paper Width Guide Motor | Pulse Motor |
| M565 | Exposure Section Nip Motor | Pulse Motor |
| THA1-2 | Ambient Temperature Sensor | IC |

### ■ Distribution Section

| Symbol | Name | Remark |
|---|---|---|
| D571 | Processor Entrance 1 Sensor(Rear) | Flood LED, Photo-transistor |
| D572 | Processor Entrance 2 Sensor(Middle) | Flood LED, Photo-transistor |
| D573 | Processor Entrance 3 Sensor(Front) | Flood LED, Photo-transistor |
| D574 | Distribution Home Position Sensor | Photo Interrupter |
| D575 | Lowering Home Position Sensor | Photo Interrupter |
| D584A/B | Distribution Section Door Sensor Interlock Switch | Micro Switch |
| M570 | Distribution Section Feed Motor | Pulse Motor |
| M571 | Distribution Motor | Pulse Motor |
| M572 | Distribution Up/Down Motor | Pulse Motor |
| S570 | Distribution Section Solenoid Valve A | |
| S571 | Distribution Section Solenoid Valve B | |

### ■ Printer Electrical Equipment Section

| Symbol | Name | Remark |
|---|---|---|
| F582 | Printer Control Section Cooling Exhaust Fan 1 | |
| F583 | Printer Control Section Cooling Exhaust Fan 2 | |
| F584 | Printer Control Section Cooling Exhaust Fan 3 | |
| F587 | Printer Control Section Cooling Suction Fan 1 | |
| F588 | Printer Control Section Cooling Suction Fan 2 | |
| F589 | FMC20Circuit Board Cooling Fan 1 | Fan 1 has been eliminated. |
| F590 | FMC20Circuit Board Cooling Fan 2 | Fan 2 has been eliminated. |
| F591 | AOM Driver Cooling Fan 1 | |
| F592 | AOM Driver Cooling Fan 2 | |
| F593 | AOM Driver Cooling Fan 3 | |
| F595 | DC Power Supply Unit Exhaust Fan | |

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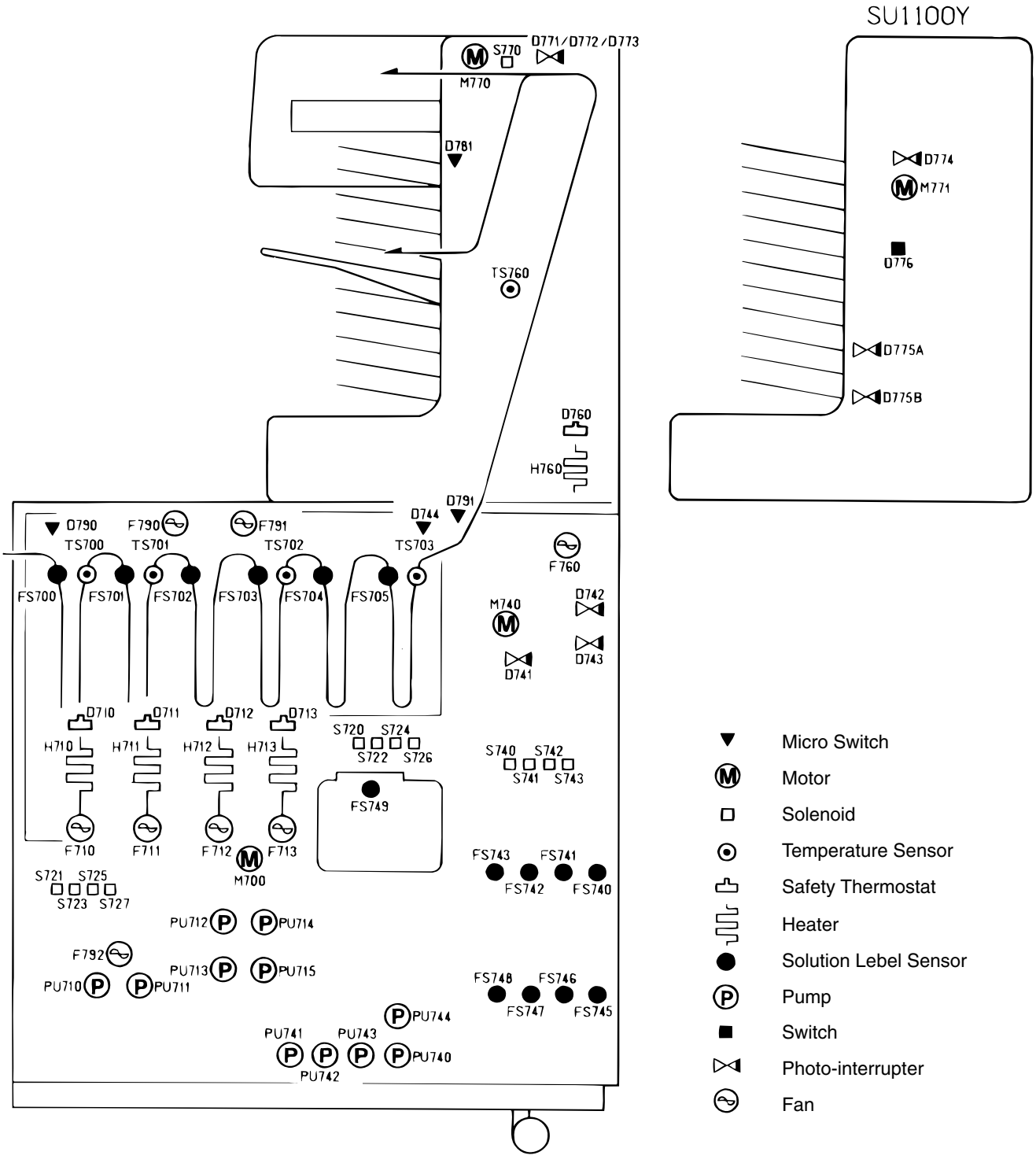
## 5.5 Processor Section

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## ■ Processor Section

| Symbol | Name | Remark |
|---|---|---|
| D790 | Processor Cover Detecting Interlock Switch | Micro Switch |
| D791 | Dryer Entrance Rack Cover Detecting Interlock Switch | Micro Switch |
| F790 | Processor Exhaust Fan 1 | |
| F791 | Processor Exhaust Fan 2 | |
| F792 | Processor Control Section Cooling Fan | |
| M700 | Processor Drive Motor | DC Motor |

## ■ Processing Solution Circulation System

| Symbol | Name | Remark |
|---|---|---|
| D710 | Safety Thermostat(P1) | To monitor the abnormality of the heater temperature |
| D711 | Safety Thermostat(P2) | To monitor the abnormality of the heater temperature |
| D712 | Safety Thermostat(PS1/PS2) | To monitor the abnormality of the heater temperature |
| D713 | Safety Thermostat(PS3/PS4) | To monitor the abnormality of the heater temperature |
| F710 | Heater Cooling Fan(P1) | |
| F711 | Heater Cooling Fan(P2) | |
| F712 | Heater Cooling Fan(PS1/PS2) | |
| F713 | Heater Cooling Fan(PS3/PS4) | |
| FS700 | Processing Solution Level Sensor(P1) | |
| FS701 | Processing Solution Level Sensor(P2) | |
| FS702 | Processing Solution Level Sensor(PS1) | |
| FS703 | Processing Solution Level Sensor(PS2) | |
| FS704 | Processing Solution Level Sensor(PS3) | |
| FS705 | Processing Solution Level Sensor(PS4) | |
| H710 | Processing Solution Heater(P1) | |
| H711 | Processing Solution Heater(P2) | |
| H712 | Processing Solution Heater(PS1/PS2) | |
| H713 | Processing Solution Heater(PS3/PS4) | |
| PU710 | Circulation Pump(P1) | |
| PU711 | Circulation Pump(P2) | |
| PU712 | Circulation Pump(PS1) | |
| PU713 | Circulation Pump(PS2) | |
| PU714 | Circulation Pump(PS3) | |
| PU715 | Circulation Pump(PS4) | |
| TS700 | Processing Solution Temperature Sensor(P1) | |
| TS701 | Processing Solution Temperature Sensor(P2) | |
| TS702 | Processing Solution Temperature Sensor(PS1, PS2) | |
| TS703 | Processing Solution Temperature Sensor(PS3, PS4) | |

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### ■ Processing Solution Replenisher/Auto Washing System

| Symbol | Name | Remark |
|---|---|---|
| D741 | Cartridge Setting Sensor | Photo Interrupter |
| D742 | Cartridge Box Upper Sensor | Photo Interrupter |
| D743 | Cartridge Box Lower Sensor | Photo Interrupter |
| D744 | Replenisher Port Door Detecting Interlock SW | Micro Switch |
| FS740 | P1-R Upper Level Sensor | |
| FS741 | P2-RA Upper Level Sensor | |
| FS742 | P2-RB Upper Level Sensor | |
| FS743 | PS-R Upper Level Sensor | |
| FS745 | P1-R Lower Level Sensor | |
| FS746 | P2-RA Lower Level Sensor | |
| FS747 | P2-RB Lower Level Sensor | |
| FS748 | PS-R Lower Level Sensor | |
| FS749 | Internal Waste Solution Level Sensor | |
| M740 | Cartridge Opening Motor | Pulse Motor |
| PU740 | Auto Washing Pump | |
| PU741 | P1-R Replenisher Pump | |
| PU742 | P2-RA Replenisher Pump | |
| PU743 | P2-RB Replenisher Pump | |
| PU744 | PS-R Replenisher Pump | |
| S720 | Rack Front Side Washing Valve(P1) | |
| S721 | Rack Rear Side Washing Valve(P1) | |
| S722 | Rack Front Side Washing Valve(P2) | |
| S723 | Rack Rear Side Washing Valve(P2) | |
| S724 | Rack Front Side Washing Valve(PS1/PS2) | |
| S725 | Rack Rear Side Washing Valve(PS1/PS2) | |
| S726 | Rack Front Side Washing Valve(PS3/PS4) | |
| S727 | Rack Rear Side Washing Valve(PS3/PS4) | |
| S740 | Cartridge Washing Valve(P1-R) | |
| S741 | Cartridge Washing Valve(P2-RA) | |
| S742 | Cartridge Washing Valve(P2-RB) | |
| S743 | P1-R Stirring Valve | |

### ■ Dryer Section

| Symbol | Name | Remark |
|---|---|---|
| D760 | Safety Thermostat | To monitor the dryer heater abnormality |
| D781 | Dryer Section Front Cover Detecting Interlock Switch | Micro Switch |
| F760 | Dryer Fan | |
| H760 | Dryer Heater | |
| TS760 | Dryer Temperature Sensor | Thermistor |

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### ■ Print Exit Section

| Symbol | Name | Remark |
|---|---|---|
| D771 | Paper Front-line Sensor | Photo Interrupter |
| D772 | Paper Middle-line Sensor | Photo Interrupter |
| D773 | Paper Rear-line Sensor | Photo Interrupter |
| M770 | Dryer Section Drive Motor | Pulse Motor |
| S770 | Path Switching Solenoid | |

### ■ Sorter SU1100Y

| Symbol | Name | Remark |
|---|---|---|
| D774 | Tray Stop Position Sensor | Photo Interrupter |
| D775A | Full(last 2) Sensor | Photo Interrupter |
| D775B | Full(complete) Sensor | Photo Interrupter |
| M771 | Sorter Drive Motor | DC Motor |
| SWA20 | 1-order Feeding Switch | |

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| | |
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